UPS - GUARD_S COMPACT - GUARDIAN & GUARDIAN LCD
ULTIPOWER - SAVER DSP- PYRAMID PLUS - PYRAMID EX
VOLTAGE REGULATOR - AC-DC / DC-AC POWER SUPPLY
TERY CHARGER - INFO CHARGER - INVERTER - LINEVERTER
- MEDICAL ISOLATION POWER SYSTEMS - INFORACK
R SOLUTIONS - COMPLEMENTARY PRODUCTS - BATTERY
ARDIAN LCD - INFORMER COMPACT - INFORMER - SINUS
S DSP - PYRAMID DSP - PYRAMID DSP-T - FLEXIBILITY
ITY - TAILOR - MADE SOLUTION PROVIDER

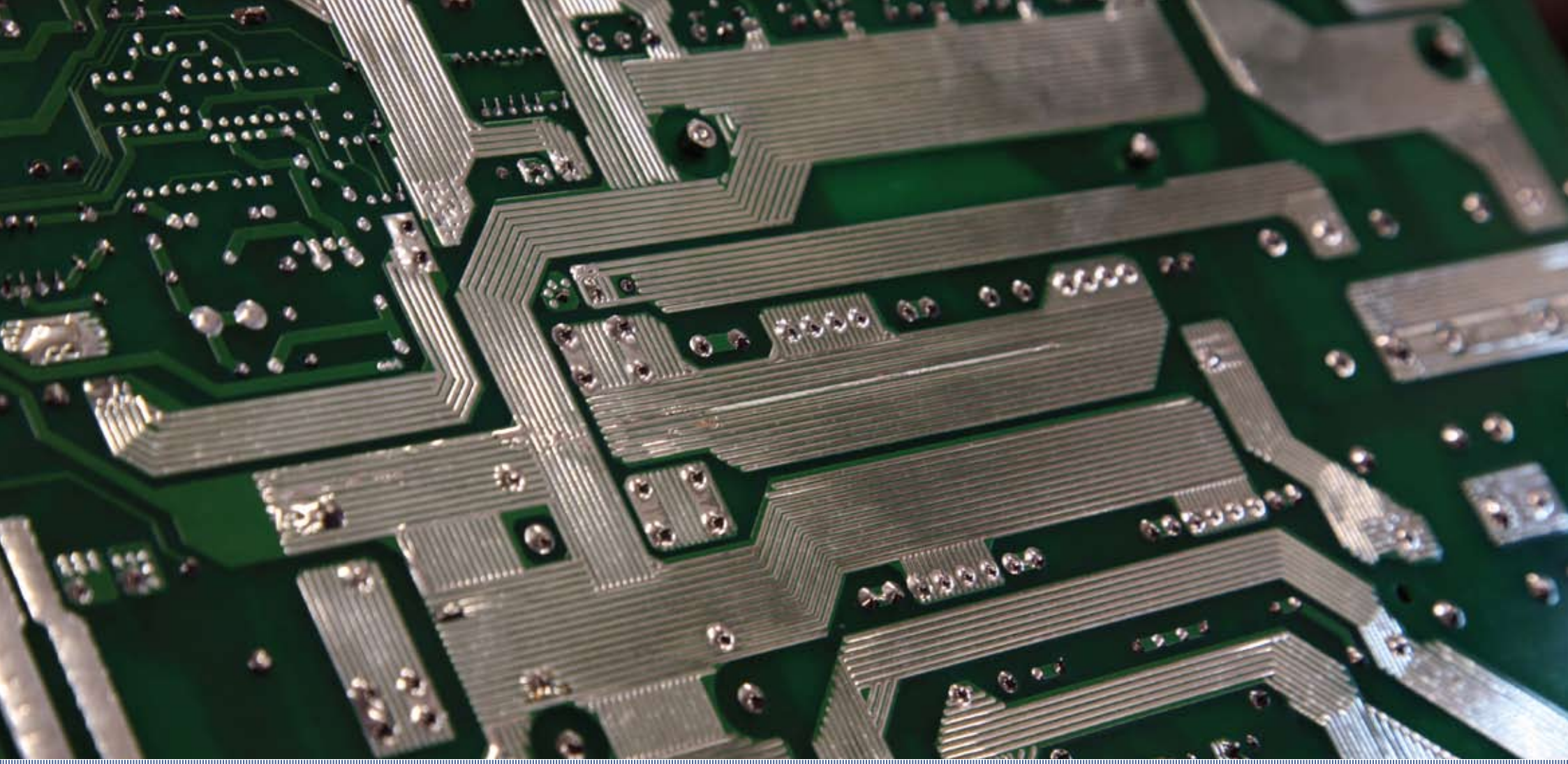
www.novestec.es / info@novestec.es

novestec
Systems
INFINITE POWER

Catalogue

A Group brand | legrand

inform



Quality in
POWER ELECTRONICS

Solution provider

Advanced Technology

Tailor Made Solutions

Flexibility

Reliability

Quality

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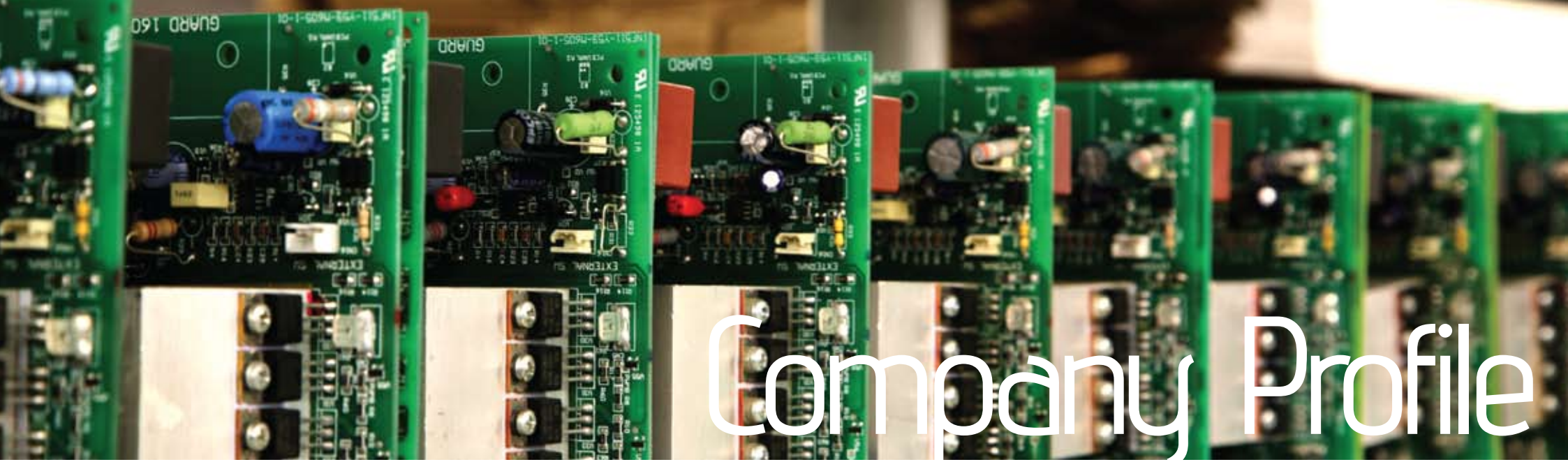


Company Profile

Inform Electronic, one of the European leading power solution specialist, is established in 1980 with the aim of designing and building industrial electronic systems. Soon after, it diversified into the production, and marketing of standard professional electronic equipment, and special projects.

The company always combines its experience with its innovative identity and is recognized by its worldwide technology leading character. Right business understanding of Inform makes the company one of the most wanted brands in the world with its exceptional growth ratio . The Company has 27,500 m^2 closed production area, committed to the manufacturing of electrical products and electronic equipments.

Analysing infrastructural conditions, and customer needs, the company decided to provide complete solutions. Inform product range varies from Uninterruptible Power Supply (UPS) Systems, Voltage Regulators, to DC Power Supply, Telecom Equipments, Battery chargers , Inverters, 19' rack cabinets and other electrical products and electronic equipments.

Since its foundation, INFORM ELECTRONIC has based its strategy on below main policies:

- Quality understanding for its products and services,
- Tailored solutions to specific customer needs,
- Customer satisfaction and happiness,
- After sales service and support
- Continuous improvement for operational excellence and advanced technology

Inform is an official ISO certified company. The company has also Gost, Soncap, and CE certifications. All the Inform products are designed and produced with the worldwide quality understanding, and ISO rules.

Inform is being acquired by Legrand Group in 2010.
Legrand is global specialist in electrical and digital building infrastructures. The Group has direct presence in more than 70 countries and number of employee is more than 31,000 people.

Key Competencies

Continuous investment on R&D and advanced technology

Inform believes that only the companies developing new products, and investing on new technologies may survive and grow. Inform product range is backed up by research and development centre, and is changing to suit the customer's today and tomorrow needs. Inform is always developing and designing new products to meet the future challenge by rapidly integrating advanced technologies. Inform research and development team is built with experienced engineers and technicians specialist on their job. The company R&D team developed new generation of several UPS types controlled by Digital Signal Processor DSP. The new generation, DSP controlled single phase UPS gained two rewards; `Technology Innovation and Creativity Reward 2000` and `Biggest Technology Contribution Reward 2002. Three phase IGBT rectifier UPS gained `Technology Innovation and Creativity Reward 2005'. Inform is one step ahead of the technology.

Apart from UPS Systems expertise, with the new investment, Inform focused on research and development on DC Power Supply field as well. Inform is offering latest technology DC Power Supply Systems of which the quality and technology is proven with many critical installations in GSM field.

Inform is ambitious and hard working to be the force behind his Partner's success. Inform works more and more to make his partners more successful.

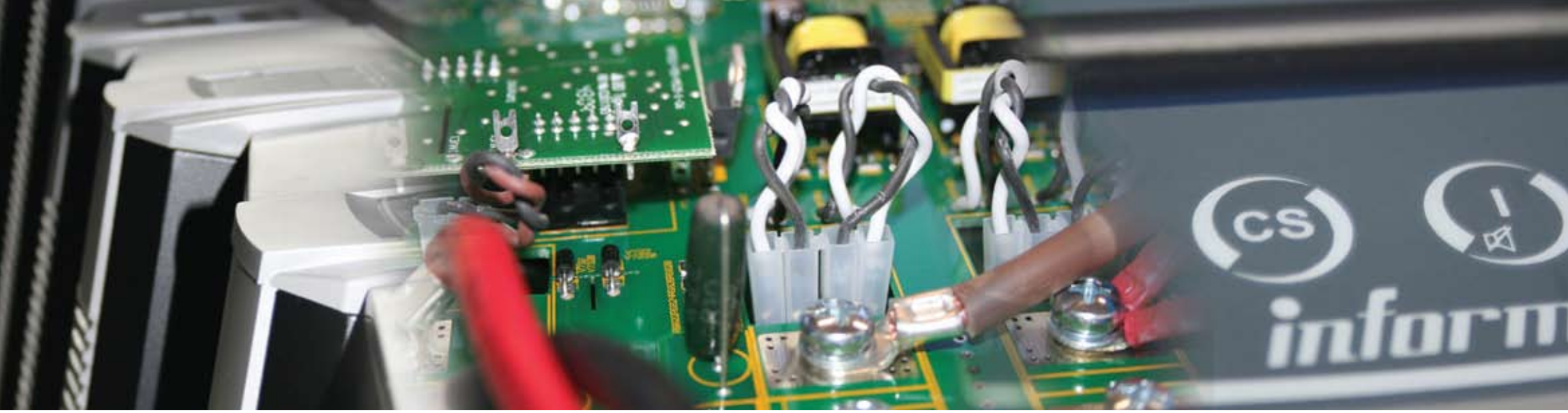
Integrated Production

Quality control

Different from the other UPS manufacturers, Inform is able to produce every single part of its products in its premises; electronic boards, mechanical parts, plastic cases, cabling, transformers and many others. Final assembly and testing are done at Inform premises. This gives to Inform the ability to control the quality at every step of production. Inform controls the quality of every single part of the product in every step of production.

Tailor Made solutions

If standard product features do not fulfill the customer needs, Inform designs can be adapted to a tailor-made specification due to its ability in manufacturing every single part of own products. Whether it is the voltage, frequency and electrical installation standards, Inform provides its customers complete solutions with the flexible production capability.



Inform Machinery Park

The company has PCB assembling facility in an air-conditioned, specially prepared area for electro static sensible components.

In addition to its automatic assembling SMD lines, the company has manual assembling lines for big components like transformers, coils, and connectors. Quality is the key point for Inform. All the finished PCB is controlled by microscope and optic devices with laser. Inform Electronic has capacity of assembling 300 million components per year. Inform machinery park shows great variety of machines giving to the company flexibility of standard and special product manufacturing as well. Computer controlled CNC machines, plastic injection machines, fully automatic painting machine, cable machines, transformer machines are some of them.

Solution provider in power electronic field thanks to wide range of products

From consumer to industrial and defense grade, from customized to standard, Inform's products display a great variety. Know-how, technology developer identity, integrated production, wide product portfolio and engineering skills help Inform to offer turnkey solutions. Offering solutions where energy is needed, Inform is well equipped to deal with all type of engineering projects in accordance with customers' needs and technical requirements.

Presales support

Inform distribution network has presence in 5 continents and offer solution to different problems. This enriches Inform's know-how and experience and all of them are shared with the partners. Technical Presales support is essential to analyse the requirements and offer the optimum solution.

Optimum balance between price and quality

Inform offers the highest quality with the most competitive way. Inform customers never look for the alternative, they always know that if Inform offers that is the optimum solution.

Technical Service Structure & 7x24 technical support

After sales service is crucial for customer satisfaction and loyalty. So requirements must be sorted out as soon as possible. Inform gives the priority to technical training programs at the early stages of the cooperation with its partners. Private and general technical training programs are organized for the partners in order to make them expert in Inform product range. Seminars and conferences are available for specific periods for the partners. The call center and international technical support team is available 7x24. Inform provides the best solution in the shortest response time. Inform is there when you need.

Thinking Globally, Acting Locally

Having presence everywhere in the world, Inform believes that every market has its own dynamics to be managed closely. So inform has close relation with its partners and supports them with local policies based on global experience

Uninterruptible Energy, Uninterruptible Support

Drawing long experience in the power management field, the quality of its products, and the way to care of its customers are the proof of Inform development, and becoming worldwide brand. With a global vision and staying ahead of technology, Inform shall make every endeavour to keep its commitments to its staff, customers, sub-contractors and trade associates.

Its distribution network extends at five continents; from Europe to Asia, South America to Africa and Australia, demonstrating its adaptability to different markets and their conditions at around 85 countries. Inform became one of the leading companies and worldwide brand in its sector knowing that continuous success can be achieved by only satisfied happy customers with the understanding of ` Uninterruptible Energy, Uninterruptible Solution, Uninterruptible Support.

Ups Product Range Table

	PRODUCT	POWER											
	LINE INTERACTIVE	**600 VA**	**650 VA**	**800 VA**	**1000 VA**	**1500 VA**	**2000 VA**	**2400 VA**	**3000 VA**				
Line Interactive	GUARD S COMPACT	√		√	√	√		√	√				
	GUARD S COMPACT rack						√	√	√				
	GUARDIAN/ GUARDIAN LCD	√	√	√	√	√	√						
	INFORMER / INFORMER rack				√		√		√				
	INFORMER COMPACT				√		√		√				
	ONLINE UPS	**1 kVA**	**2 kVA**	**3 kVA**	**5 kVA**	**6 kVA**	**7,5 kVA**	**10 kVA**	**15 kVA**	**20 kVA**	**30 kVA**	**40 kVA**	
1 Ph in -1 Ph out	SINUS / SINUS rack	√	√	√									
	SINUS Eco	√	√	√									
	SINUS LCD /convertible	√	√	√									
	SAVER DSP			√	√	√	√	√					
	SAVER DSP rack			√	√	√		√					
	GREEN DSP			√	√	√	√	√					
	DSP MULTIPOWER /convertible				√	√		√					
3 Ph in 1 Ph out	DSP MULTIPOWER /convertible							√					
	DSP MULTIPOWER /tower								√	√			
	SAVER PLUS DSP							√	√	√			
	PYRAMID DSP							√	√	√	√	√	
		10 kVA	**15kVA**	**20 kVA**	**30 kVA**	**40 kVA**	**60 kVA**	**80 kVA**	**100 kVA**	**120 kVA**	**160 kVA**	**200 kVA**	**250 kVA**	**300 kVA**
3 Ph in - 3 Ph out	PYRAMID DSP	√	√	√	√	√	√	√	√	√	√	√	√	√
	PYRAMID DSP T	√	√	√	√	√	√	√	√	√	√	√	√	√
	PYRAMID PLUS	√	√	√	√	√	√	√	√	√	√	√	√	√
		400kVA	**500kVA**	**600kVA**	**800kVA**									
	PYRAMID EX	√	√	√	√									

Guard_S Compact Series

Uninterruptible Power Systems
Line Interactive Technology
600VA to 3000VA (Tower Model), 2000VA to 3000VA (Rack Model)

- Microprocessor controlled Line Interactive Technology
- Boost and Buck Automatic Voltage Regulation (AVR)
- Advanced Battery Management (ABM)
- Short circuit and overload protection
- Lightning and surge protection
- Online, Battery, Fault status LEDs
- Cold Start Function
- Communication Port and Remote Monitoring Software*
- Tel / Modem Internet surge protection *
- Compact size and user friendly operation

*Available at AP models only

Guard_S Compact Specifications

MODEL	GUARD_S 600A/AP	GUARD_S 800AP	GUARD_S 1000AP	GUARD_S 1500 AP	GUARD_S 2400AP	GUARD_S 3000AP
INPUT						
Capacity (VA)	600	800	1000	1500	2400	3000
Voltage	230V or 220V ± 25%					
Frequency	50 or 60 Hz ± 5Hz (Auto Sensing)					
OUTPUT						
Power Factor	0,6					
Voltage (On Battery)	Simulated Sinewave 230V or 220V ± 10%					
Frequency (On Battery)	50 or 60 Hz ± 1Hz					
Voltage Regulation (AVR)	AVR automatically increase output voltage 15% above input voltage if -9% to-25% of nominal AVR automatically decrease output voltage 13% below input voltage if +9% to+25% of nominal					
Transfer Time	4 ms					
Outlets						
IEC Version	3pcs IEC		6pcs IEC		4pcs IEC	
Schuko Version	1pc Schuko		2pcs Schuko			
BATTERY						
Type	Maintenance-free lead acid batteries					
Recharge Time	6-8 Hours (To 90% Of Full Capacity)					
Voltage	12VDC		24VDC		48VDC	
Back Up Time	5 - 30 Minutes (Depending On Computer Load)					
DISPLAY						
LED Display	2 LEDs For Line / Back Up And Battery Low / Fault		4 LEDs for Line , Back Up , Fault And Overload		5 LEDS For Line, Overload, AVR , Battery	
PROTECTION						
	Short Circuit, Overload, Noise Suppression, Spike, Battery Overdischarge, Modem/Network (AP Models only)					
COMMUNICATION						
Interface (Communication Ports)	RS 232 at AP Model Only	RS232 Standard				
Software	Present at AP Model Only	Standard				
ENVIRONMENT						
Operating Temperature	0-40 °C					
Humidity	0-95% non-condensing					
Audible Noise At 1m	<40dBA			<45dBA	<50dBA	
Protection Class	IP20					
PHYSICAL SPECIFICATIONS						
Tower						
Net Weight (kg)	6	7,5	13	16	26,2	28,8
Shipping Weight (kg)	7	8,5	14,2	17,5	28	30,1
Dimensions (mm) WxHxD	96x172x355		148x235x361		175x235x460	
19" Rack Mount Type				GS 2000 APRM	GS 2400 APRM	GS 3000 APRM
Capacity (VA)				2000 VA	2400 VA	3000 VA
Net Weight(Without Battery)				18	28	30
Dimensions (mm) (WxDxH)	N/A			482x400x133,5		
STANDARDS						
Standards	EN 62040-1-1 (Safety); EN62040-2 (EMC)					

Guardian & Guardian LCD Series

Uninterruptible Power Systems
Line Interactive Technology
600VA to 2000VA

- Microprocessor controlled Line Interactive Technology
- Boost and Buck Automatic Voltage Regulation (AVR)
- LCD or LED Display Panel
- Advanced Battery Management (ABM)
- Input Frequency auto sensing (50/60 Hz)
- Auto restart after mains recovery
- Charging during switched off mode
- Short circuit and overload protection
- Cold Start Function
- USB Communication Interface and Remote Monitoring Software*
- Modem/Phone line protection*
- Compact size and user friendly operation

*Available at AP models only

Guardian & Guardian LCD Specifications

MODEL	GUARDIAN 600A/AP GUARDIAN LCD 600A/AP	GUARDIAN 650A/AP GUARDIAN LCD 650A/AP	GUARDIAN 800A/AP GUARDIAN LCD 800A/AP	GUARDIAN 1000A/AP GUARDIAN LCD 1000A/AP	GUARDIAN 1500A/AP GUARDIAN LCD 1500A/AP	GUARDIAN 2000A/AP GUARDIAN LCD 2000A/AP
INPUT						
Capacity (VA)	600	650	800	1000	1500	2000
Voltage	220V or 230V					
Input Voltage Range	- 25%, +25%					
Frequency	50 or 60 Hz (Auto Sensing)					
OUTPUT						
Power Factor	0,6					
Voltage (On Battery)	220V or 230V ± 10%					
Waveform (On Battery)	Simulated Sinewave					
Frequency (On Battery)	50 or 60 Hz ± 1Hz					
Voltage Regulation (AVR)	AVR automatically increases output voltage 15% above input voltage if -10% to -26% of nominal AVR automatically decreases output voltage 15% below input voltage if +10% to +22% of nominal					
Transfer Time	2 - 6 ms					
Outlets	1pcs Schuko 1pcs IEC			2pcs Schuko 2 pcs IEC		
BATTERY						
Type	Maintenance-Free Lead Acid Batteries					
Recharge Time	6 Hours (To 90% Of Full Capacity)					
Voltage	12VDC			24VDC		
Back Up Time	5 - 30 Minutes (Depending On Computer Load)					
DISPLAY						
LED Display	Fault, Battery Mode, AC Mode					
LCD Display (For Guardion LCD)	Input & Output Voltage Values, AC Mode / Load Level / Battery Capacity Indicators					
PROTECTION						
	Short Circuit, Overload, Battery Discharge, Overcharge, Tel / Phone line (AP Models Only)					
COMMUNICATION						
Communication Interface	USB Port (Only AP Models)					
AUIDIBLE ALARMS						
	Battery Mode (Every 10 Seconds) , Low Battery (Every Second) , Overload (Every 0.5 Second) Battery Replacement (Every 2 Seconds), Fault (Continous)					
ENVIRONMENT						
Operating Temperature	0-40 °C					
Humidity	0 to 90% Non-Condensing					
Audible Noise	<40dBA					
Protection Class	IP20					
PHYSICAL SPECIFICATIONS						
Net Weight (kg)	4	4,25	4,9	8	11,1	11,5
Dimensions (mm) WxDxH	100x287x142			146x350x160	146x397x205	
STANDARDS						
Standards	EN 62040-1-1 (Safety), EN 62040-2(EMC)					

Informer Compact Series

Uninterruptible Power Systems
Line Interactive Technology Pure Sinewave Output
1000VA / 2000VA / 3000VA

- Pure Sinewave Output for any critical load
- User Friendly LCD Display
- Boost and buck Automatic Voltage Regulation
- 97% High Effciency in Normal Mode
- Communication Port and Remote Monitoring Software
- Overload and Short Circuit Protection
- Advanced Battery Management
- Discharge Protection
- Fault Alarms and State Warnings
- Cold Start Function
- Compact size, light weight and low noise

Informer Compact Specifications

MODEL	Inf-C 1000	Inf-C 2000	Inf-C 3000
INPUT			
Capacity (VA)	1000	2000	3000
Voltage	220 / 230 / 240 VAC ± 25% (adjustable from DIP switches on ups)		
Frequency	50 or 60Hz ± 5%		
OUTPUT			
Power Factor	0,6		
Voltage (On Mains)	220 / 230 / 240 VAC ± 12%		
Voltage (On Battery)	220 / 230 / 240 VAC +3%, -10%		
Frequency (On Battery)	50 or 60 Hz ± 0,5%		
Wave Form	Sine Wave, THD < 3 %		
Voltage Regulation (AVR)	AVR automatically increases output voltage 15% above input voltage if -9% to 25% of nominal. AVR decreases output voltage 15% below input voltage if +9% to +25% of nominal		
Transfer Time	4 ms		
Overload	UPS automatically shuts down if overload exceeds 110% of nominal at 10min. (AC mode) and if overload exceeds 100% of nominal at 10 sec. (Battery Mode)		
Outlet	3pcs IEC & 2pcs Schuko Outlets		
BATTERY			
Type	Maintenance-Free Lead Acid Batteries		
Recharge Time	2 to 4 Hours to 90%		
Voltage	24Vdc	48Vdc	
Quantity	2x12V 7Ah	4x12V 7Ah	4x12V 9Ah
Back up time	5 - 30 Minutes (Depending On Computer Load)		
Protection	Automatic Self-Test & Discharge Protection, Replace Battery Indicator		
DISPLAY			
LED Display	Utility Normal, Backup, UPS Fault And Battery Condition		
LCD Display	Load Level, Battery Level, By pass, AVR, Battery Low-Replace-Fault, UPS Fault,Overload		
ALARMS			
Alarms	Line Failure, Battery Low, Overload And Fault		
PROTECTION			
	Spike Protection (320 Joule, 2 ms), Overload Protection, Short Circuit Protection		
COMMUNICATION			
Interface (Communication Ports)	RS232 Standard		
Software	Standard		
ENVIRONMENT			
Audible Noise	< 40 dBA (1m From Surface)	< 45 dBA (1m From Surface)	
Protection Class			
PHYSICAL SPECIFICATIONS			
Net Weight (kg)	15,5	23	27
Dimensions (wxdxh) mm	175x370x247	175x427x247	
STANDARDS			
Standards	EN 62040-1-1 (Safety), EN 62040-2(EMC)		

Informer Series

Uninterruptible Power Systems
Line Interactive Technology Pure Sinewave Output
1000VA / 2000VA / 3000VA (Tower & Rack Models)

- Pure sinewave output for any critical load
- High battery charging capacity
- Extended back up time with battery pack
- Boost and Buck Automatic Voltage Regulation
- Overload protection
- Short circuit protection
- Compact size, light weight&low noise
- Discharge protection
- Short recharge time
- Fault alarms
- State warnings
- Monitoring Software
- Rack Version available

Informer Specifications

MODEL		1000			2000				3000			
INPUT												
Power (VA)		1000			2000				3000			
Voltage		220V / 230V ± 25%										
Frequency		50 or 60Hz ± 5%										
OUTPUT												
Power Factor		0,6										
Voltage (On Battery)		Pure Sinewave 220V / 230V ± 5%										
Frequency (On Battery)		50 or 60 Hz ± 0.5%										
Voltage Regulation (AVR)		AVR automatically increases output voltage 15% above input voltage if -9% to 25% of nominal. AVR decreases output voltage 13% below input voltage if +9% to +25% of nominal										
Transfer Time		2/4 ms.										
Overload		UPS automatically shuts down if overload exceeds 110% of nominal at 20sec. and 125% at 2 sec.										
Outlets		2 pcs SCHUKO or 3 pcs IEC OUTLETS			2 pcs SCHUKO or 4 pcs IEC OUTLETS							
BATTERY												
Type		Maintenance-free lead acid batteries										
Recharge Time (Hour)		4	6	* 6	4	*5	*6	* 8	4	*5	*6	* 8
Voltage		24 VDC			48 VDC				48 VDC			
Quantity		2x12V 7Ah	2x12V 12Ah	*6x12V 12Ah	4x12V 7Ah	*8x12V 7Ah	*12x12V 7Ah	*16x12V 7Ah	4x12V 7Ah	*8x12V 7Ah	*12x12V 7Ah	*16x12V 7Ah
Protection		Automatic Self-Test & Discharge Protection, Replace Battery Indicator										
UPS Type		Informer 1000 -1	Informer 1000-2	Informer 1000-3	Informer 2000-1	Informer 2000-2	Informer 2000-3	Informer 2000-4	Informer 3000-1	Informer 3000-2	Informer 3000-3	Informer 3000-4
Power	Sample Device	Back Up Time (min)										
(600 W)	Nominal	4	10	45	20	50	80	180	20	50	80	180
(1200 W)	Nominal	-	-	-	10	25	40	90	10	25	40	90
(1800 W)	Nominal	-	-	-	-	-	-	-	5	13	18	25
(80 W)	TV	90	120	480	180	310	620	850	180	310	620	850
(150 W)	Combi	35	70	300	80	180	340	720	80	180	340	720
(200 W)	PC	25	50	180	60	130	250	540	60	130	250	540
DISPLAY												
LED Display		Back Up, Overload, Replace Battery Indicators										
PROTECTION												
		Spike Protection (320 Joule, 2 ms), Overload Protection, Short Circuit Protection										
COMMUNICATION												
Interface (Communication Ports)		RS 232 Standard										
Software		Standard										
ENVIRONMENT												
Audible Noice		< 40 dBA (1m From Surface)			< 45 dBA (1m From Surface)							
Protection Class		IP20										
PHYSICAL SPECIFICATIONS												
Tower Type												
Net Weight (kg)		19	20,5	16+*23	28	18+*32	28+*32	28+ *42	32	19+*32	29+*32	29+ *42
Dimension	Width	135	135	2x135	135	2x135	2x135	2x135	135	2x135	2x135	2x135
	Depth	430	430	430	470	470	470	470	470	470	470	470
	Height	390	390	390	390	390	390	390	390	390	390	390
19" Rack Mount Type												
Dimension(WxDxH)mm		483x450x132			483x512x132							
STANDARDS												
Standards		EN 62040-1-1 (Safety), EN 62040-2(EMC)										

* Battery Pack

Sinus Series

Uninterruptible Power Systems
On-Line "Double Conversion" Technology
1 phase in-1 phase out, 1kVA to 3kVA (Tower & Rack Models)

Sinus Rack Type

- Microprocessor Controlled Online Double Conversion Technology
- Pure sinewave output less than 3% THD
- Wide input voltage range ±27% of nominal
- Smart RS-232 communication port
- Internal SNMP Slot Card Option
- Management software compatible
- Input Power Factor Correction PFC (>0,98)
- Overload & short circuit protection
- Cold start (DC power on)
- Genius battery management (GBM)
- Compact size, light weight & low noise
- Rack version available

Sinus Specifications

MODEL		SS 210	SS 220	SS 230
INPUT				
Power (kVA)		1	2	3
Voltage		160VAC - 280VAC		
Frequency		50/60 Hz ±5%		
Power Factor		>0,98		
OUTPUT				
Output Power Factor		0,7		
Voltage		220/230/240 VAC		
Voltage Regulation		±%2		
Frequency		50/60 Hz (Auto Detection)		
Frequency Regulation		± 0,5%		
Harmonic Distortion		<3% (For Linear Loads)		
Crest Factor		3:1		
Overload Capacity		100%-120% For 60 Seconds, 120%-150% For 10 Seconds		
Whole efficiency		Up to 88%		
Inverter efficiency		>90%		
Transfer Time		0ms		
Outlets		3pcs IEC & 1pc Schuko Outlets	3pcs IEC & 2pcs Schuko Outlets	6pcs IEC & 2pcs Schuko Outlets
BATTERY				
Type		Maintenance-free lead acid batteries		
Recharge Time		8 hours(to 90% of full capacity)		
Voltage		36VDC	72VDC	96VDC
Quantity		3 pcs 12V 7ah	6 pcs 12V 7ah	8 pcs 12V 7ah
Back Up Time	Full Load	8 min		7 min.
	Half Load	20 min		15 min.
DISPLAY				
LED Display		Line Input , Inverter, By Pass,Fault, Overload, Battery Low, Self - Test, Load / Battery Level		
ALARMS				
		Line Failure, Battery Low, Transfer to By Pass, Failure Events		
PROTECTION				
		Short Circuit, Over Temperature, Overload, High Voltage, Battery Low		
COMMUNICATION				
Interface(Communication Ports)		RS-232		
Monitoring And Management Software		Standard		
ENVIRONMENT				
Temparature		0°C - 40°C		
Humidity		0% - 95%		
Noise Level (1m Distance)		<45dBA		
Protection Class		IP20		
PHYSICAL SPECIFICATIONS				
Tower Type				
Net Weight (kg)		15	29	35
Dimensions(mm) WxDxH		147x401x223	130x475x360	190x450x360
19" Rack Mount Type				
Net Weight (kg)		16	28	37
Dimensions(mm) WxDxH		483x390x88	483x485x130	483x460x192
STANDARDS				
Standards		EN 62040-1-1 (Safety), EN 62040-2(EMC)		

Sinus Eco Series

Uninterruptible Power Systems
On-Line "Double Conversion" Technology
1 phase in-1 phase out
1kVA to 3kVA

- Online double conversion technology
- Input power factor correction PFC (>0,99)
- Pure sinewave output less than 3% THD
- Wide input voltage / Frequency range
- Smart RS-232 communication port
- Internal SNMP Slot Card Option
- Management software compatible
- Overload & short circuit protection
- Cold start (DC power on)
- Smart battery management
- Compact size, light weight & low noise

Sinus Eco Series Specifications

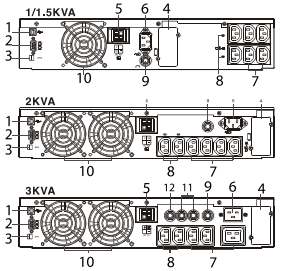
MODEL		SES 210	SES 220	SES 230
INPUT				
Power(kVA)		1	2	3
Voltage Range		110VAC ~ 300VAC (@ 0% to 25% Load)		
		140VAC ~ 300VAC (@ 25% to 50% Load)		
		160VAC ~ 300VAC (@ 50% to 100% Load)		
Frequency		45Hz-65Hz		
Power Factor		≥0.99 (@full linear load)		
OUTPUT				
Output Power Factor		0.7		
Voltage		220V / 230V / 240VAC		
Voltage Regulation		<±1% (till low battery warning signal)		
Frequency (Synchronized range)		3Hz or 1Hz (selectable)		
Frequency (Battery Mode)		50 / 60Hz±0.1%		
Harmonic Distortion		<3% (@full linear load), <6% (@full non-linear load)		
Crest Factor		3:1		
Output Waveform		Sinusoidal		
Overload Capacity		100% to 105% : Continous / 106%-120% : 30 seconds / 121%-150% : 10 seconds / >150% : transfer to bypass		
Line Mode efficiency		±>86%	±>87%	±>88%
Battery Mode efficiency		±>85%	±>86%	±>87%
Transfer Time (AC to DC)		0ms		
Outlets		3pcs IEC & 1pc Schuko	3pcs IEC & 2pcs Schuko	6pcs IEC & 2pcs Schuko
BATTERY				
Type		Maintenance-free lead acid batteries		
Recharge time (up to 80 %)		5hours		
Voltage		24VDC	48VDC	72VDC
Quantity		2 pcs 12V 7ah	4 pcs 12V 7ah	6 pcs 12V 9ah
Back Up Time	Full Load	3min		
	Half Load	10min		
Cold Start		YES		
DISPLAY				
LED Display		Normal Mode, Battery Mode, Bypass Mode, Self-Test, Weak-Bad Batery, Site Wiring Fault, Fault, Overlaod, Load/Battery Level		
ALARMS				
Battery		Buzzer Sound once every 1.5secods		
Low Battery		Buzzer Sound once every 0.2secods		
Overload		Buzzer Sound once every 3secods		
Normal alarm		Buzzer Sound once every 3secods		
Fault		Countinous Buzzer Sound		
PROTECTION				
Short Circuit		Bypass Mode: Fuse, Normal Mode: Output Breaker / Electronic Circuit, Battery Mode: Output Breaker / Electronic Circuit		
Battery		Battery Discharge Management		
EPO		UPS shuts down immidiately		
Over Temperature		Normal Mode: Transfers to Bypass Mode, Battery Mode: UPS shuts down immidiately		
COMMUNICATION				
Interface(Communication Ports)		RS-232		
Monitoring and Management Software		standard		
Options		Dry Contact Board, USB Board, SNMP Card		
ENVIRONMENT				
Temparature		0°C - 40°C		
Humidity		0% - 90% (without condensation)		
Noise Level(1m Distance)		<50dBA		
Protection Class		IP20		
PHYSICAL SPECIFICATIONS				
Net Weight (kg)		12	22	27
Dimensions(mm) WxDxH		144x360x220	152x438x322	190x438x322
STANDARDS				
Standards		EN 62040-1-1 (safety), EN 62040-2(EMC)		

Sinus LCD Series

Uninterruptible Power Systems
On-Line "Double Conversion" Technology
1 phase in-1 phase out, 1kVA to 3kVA (Tower & Rack Convertible)

- On-line 'double conversion' technology
- Real Digital Signal Processor (DSP) Controller
- Power factor correction
- User friendly LCD display
- Programmable Receptacles
- Wide input voltage range and frequency
- Smart communication port and SNMP management capability
- Hot Swappable Battery
- Emergency shutdown control through EPO
- Overload & short circuit protection
- Powerful Built-in Charger
- Extended back up time with battery cabinet
- Cold start (DC power on)
- Genius battery management (GBM)
- RS232, USB and SNMP can be activated simultaneously
- Compact size, light weight & low noise

Rear Panel Views



1.USB Port 2. RS232 Port 3.Emergency Power Off (EPO) Dry Contact Signal inputs 4.Communication Card Options Slot 5.External Battery Connector 6.AC power connection socket 7.AC Outlets 8.Two programmable outlets 9.Utility Input circuit breaker 10.Cooling Fans 11.Output circuit breaker for two outlets 12.Output circuit breaker for two programmable outlets

Accessories

Communication

- Internal SNMP Slot Card
- External SNMP Adapter
  SNMP Adapter Net Agent Mini DP522
  SNMP Adapter CS121BL
- Dry Contact Board

Battery Cabinets

- BC 2000-sinus, RMBC 2000-sinus
- BC 3000-sinus, RMBC 3000-sinus

Other

- 200W Additional charger card for 1,2&3kva
- 500W Additional charger card for 2&3kva
- Rail Kit
- External Manual Bypass Switch
  MTBS-SS123
- External Battery Connection Cable

*Communication Port and Software are standard.

Package Content

- User Manual
- RS232 Communication Cable
- RJ11 Phone Cable
- Power Cable for 1000VA and 3000VA
- Fixed power cable for 2000VA on the ups
- 1 piece IEC Cable for 1000VA
- 2 pieces IEC Cable for 2000VA & 3000VA
- UPSMAN Software
- Accessories for Rack Tower Applications

Sinus LCD Specifications

MODEL	SS LCD 210	SS LCD 220	SS LCD 230
INPUT			
Power(kVA)	1	2	3
Voltage	160 VAC - 288 VAC		
Frequency	50/60 Hz ±5% (Auto Sensing)		
Power Factor	>0,99		
OUTPUT			
Power Factor	0,8		
Voltage	220VAC / 230 / 240VAC		
Voltage Regulation	±%1		
Frequency	50/60 Hz (Auto Detection)		
Frequency Regulation	± 0,1%		
Harmonic Distortion	<3%		
Crest Factor	3:1		
Overload Capacity	100%-120% for 30 Seconds, 120%-150% For 10 Seconds		
Whole Efficiency	>85%		>88%
Inverter Efficiency	>90%		
Transfer Time	0ms		
BATTERY			
Battery Type	Maintenance - Free Lead Acid Batteries		
DC Voltage	36V	72V	
Internal Battery	3pcs 12V 7Ah	6pcs 12V 7Ah	6pcs 12V 9Ah
Built Max. Charge Current	1.8A	2.1A	2.7A
Back Up Time Full Load	7 min.		5 min.
Half Load	20 min.		15 min.
Recharge Time	3 Hours (to 90% Of Full Capacity)		
DİSPLAY			
LCD Panel	Input / Output Voltage And Frequency Values, Load %, Battery Voltage, Internal Temperature		
LED Indicators	Utility Or By Pass, Battery Low, Battery Abnormal, Overload, Site Wiring Fault, Service Mode, Ups Off, Ups Abnormal Indicators		
ALARMS			
	Line Failure, Battery Low, Over Load, Failure Events		
PROTECTIONS			
	Short Circuit, Over Temperature, Overload, High Voltage, Battery Low, EPO		
COMMUNICATION			
Interface (Communication Ports)	RS232 and USB		
Slots	Relay Contact Board, SNMP / WEB Card		
ENVİRONMENT			
Temparature	0°C - 40°C		
Humidity	0% - 90%		
Noise Level (1m Distance)	<50dBA (At 1 Meter)		
Protection Class	IP 20		
PHYSICAL			
Outlets	6pcs IEC or 2pcs Schuko		4pcs IEC or 2pcs Schuko
Dimensions (mm) WxHxD	440x88x405	440x88x650	440x88x650
Net Weight (kg)	16	29,5	30
STANDARDS			
Standards	EN 62040-1-1 (Safety), EN 62040-2(EMC)		

DSP Multipower Convertible Series

Uninterruptible Power Systems

On-Line "Double Conversion" Technology

1Phase in / 1 Phase out 5kVA to 10kVA, 3Phase in / 1 Phase out 10kVA (Tower & Rack Convertible)

(Ups Looking Battery Cabinet)

- On-line 'double conversion' technology
- Real Digital Signal Processor (DSP) Controller
- Parallel redundant operation up to 4 units
- Input Power Factor Correction PFC(>0,99)
- Low total harmonic distortion (THD) level
- Convertible display helps to use both for tower and rack applications
- Transformerless Design
- High Performance with the PWM Sinewave Topology
- Cold Start Function
- Intelligent Battery Management System extends the life time of batteries
- Overload, Overheat & Short Circuit Protections
- User Friendly Multi-Functional LED/LCD Display Panel
- Energy Saving Mode (ECOMODE)
- Smart Fan Speed Regulation with temperature controlled
- RS232 Communication Port & Management Software
- Internal SNMP, DRY contact RS485 card options

DSP Multipower Convertible Specifications

MODEL	DSPMP-1105	DSPMP-1106	DSPMP-1110	DSPMP-3110
Power (kVA)	5	6	10	10
INPUT				
Phase Configuration	1Ph + N + PE			3Ph + N + PE
Nominal Voltage	220V/230V			380V/400V
Minimum Voltage (at half load)	160V			277V
Minimum Voltage (at ful load)	180V			312V
Maximum Voltage	280V			485V
Frequency	45-65 Hz			
Power Factor	0,99			
OUTPUT				
Power Factor	0,8			
Phase Configuration	1Ph + N + PE			
Nominal Voltage	220V / 230V (Adjustable)			220V / 230V
Nominal Current at 220V	23A	27A	45,5A	
Wave Form	Pure Sine Wave			
Total Harmonic Distortion at 100% Linear Load	<3%			
at 100% Non-Linear Load	<5%			
Frequency	50Hz or 60Hz (Adjustable)			
Frequency Tolerance (Free Running)	±0,2 %			
Frequency Regulation	±1Hz; ±3Hz			
Static Voltage Regulation (0%-100% Load)	<1%			
Crest Factor	3:1			
Transfer Time	0sec			
Overload (100% to 150%)	2,5 min			
Overload (>150%)	Transfer to By Pass			
Total Efficiency	≥90%			
Greenmode Efficiency	≥97%			
Output Connection	Terminals			
Outlets (Optional)	External Socket Box (2 pcs SCHUKO, 4 pcs IEC Outlets)			
BATTERY				
Type	Maintenance-Free Lead Acid Batteries			
Recharge Time	4-6h up to 90%			
Voltage	240VDC			
Quantity Per String	20pcs			
Cold Start	Present			
DISPLAY				
LED + LCD Display	Line Mode, Back up Mode, Eco Mode, By pass Supply, Battery Low, Battery Bad/Disconnect, Overload, UPS Fault, Interruption during transfer			
LCD display	Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load%, Battery Voltage, Internal Temperature			
Self Diagnostics	Upon Power On, Front Panel Setting and Through Software Control, 24h Routine Check			
PROTECTION				
Overload Protection	Inverter Supply: 105%-150% for 160 secods ~ 2 cycles before switching bypass. Bypass Supply:105%-200% for 500 secods ~ 8 cycles before stopping supply load.			
Short Circuit Protection	Switch Off Immediately			
Other Protection	Overheat, Battery Low			
COMMUNICATION				
Interface (Communication Ports)	Standard RS232 Port And Optional RS485, Internal SNMP, Dry Contact Cards			
Monitoring and Management Software	Standard			
ENVIRONMENT				
Operating Temperature	0 °C.... + 40 °C			
Proposed Temp. To Extend Battery Life	20 - 25 °C			
Humidity	Up To 90% (Non-Condensing)			
Audible Noise at 1 m	<50 dB			
Protection Class	IP 20			
PHYSICAL SPECIFICATIONS (Tower Position)				
Net Weight (Power Module)	25kg		26kg	28kg
Net Weight (With Internal Batteries)	55kg			
Dimensions (mm) (HxWxD) - Power Module	440x88x680		440x132x680	
Dimensions (mm) (HxWxD) - W/Battery Vers.	440x176x680			
STANDARDS				
Standards	EN62040-1-1 (Safety); EN62040-2 (EMC);EN62040-3(Performance); EN60950-1			

DSP Multipower Series

Uninterruptible Power Systems
On-Line "Double Conversion" Technology
3Phase in / 1Phase out - 15kVA & 20kVA

- On-Line Double Conversion Technology
- Real Digital Signal Processor (DSP) Controller
- N+1 Power Scalable Parallel Redundancy
- Parallel Connection Availability up to 4 units
- Increased Input Power Factor (0,95)
- Transformerless Design
- Cold Start Function
- Overload, Overheat & Short Circuit Protections
- User Friendly Multi-Functional LED/LCD Display Panel
- Energy Saving Mode (GREEN MODE)
- Intelligent Battery Management System
- RS232 Communication Port & Management Software
- SNMP, Dry Contact, RS485,USB Card options

DSP Multipower Series Specifications

MODEL	DSPMP-3115	DSPMP-3120
INPUT		
Voltage Window (@75% Load)	277~485Vac(3Ph + N)	
Frequency	45 ~ 65 Hz	
Power Factor	>0.95 at 100% Linear Load	
OUTPUT		
Rated Voltage	200/220/230/240VAC Selectable	
Voltage Regulation	±2%	
Capacity	15000VA/13500W	20000VA/18000W
Rated Power Factor	0.9 Lagging	
Wave Form	Pure Sine Wave, THD<3% (no load to full load)	
Frequency Stability	±0.2%(Free Running)	
Frequency Regulation	±1Hz; ±3Hz	
Transfer Time	0ms	
Crest Factor	3:01	
Efficiency(AC to AC, Normal)	> 91%	
BATTERY		
Quantity	20pcs per string	
Voltage	240Vdc	
Charging Current	4A	
PHYSICAL		
Dimensions WxDxH (cm)	29 x 65 x 77	
Net Weight (kg)	60	62
INTERFACE		
Interface Type	Standard : RS232, EPO Option : RS485, USB, Dry contact, SNMP	
Communication Slots	2	

Saver DSP Series

Uninterruptible Power Systems
On-Line "Double Conversion Technology"
1 Phase in, 1 Phase out, 3 to 10kVA (Tower & Rack Models)

Saver DSP Rack Type

Rack Type Battery Cabinet

- On-line 'double conversion' technology
- Real Digital Signal Processor (DSP) controlled IGBT technology
- Wide input voltage range (80 V - 280 V)
- Input Power Factor Correction PFC(>0,99)
- Low Total Harmonic Distortion (THD) Level
- Intelligent battery management system extends the life time of batteries
- Transformerless Design
- Small dimensions
- Smart fan speed regulation
- Artificial intelligence algorithms to improve reliability and technical performance
- LCD display
- Advanced communication possibility via RS - 232 and relay interface
- Management and monitoring software available for all operating systems
- SNMP support
- Rack Version Available

Accessories

Communication

- AS 400
- EPO (Emergency Power Off)
- Relay Interface Board
- UPSMAN (Management Software)
- Multiserver Shutdown Licence
- External SNMP Adapter
  - SNMP Adapter Net Agent Mini DP 522
  - SNMP Adapter CS121BL
- Remote Monitoring Panel& cable For Remote Panel

*Available for rack mounted version

Other

- Additional Charging Set (450W)
- Additional Filter
- Transformer

Battery Cabinets

UPS looking battery Cabinets

- BC1714 (14 pcs 12V 18ah)
- BC1426 (14 pcs 12V 25ah)
- BC0740 (40 pcs 12V 7ah)
- BC1720 (20 pcs 12V 18ah)
- BC2620 (20 pcs 12V 25ah)
- BC1232 (32 pcs 12V 12ah)

Eco Cabinets (different battery configurations available)

- BC00, BC10, BC20, BC40

Rack Mounted Battery Cabinets*

- RM BC 0714 - 3U (14 pcs 12V 7ah)
- RM BC 1214 - 5U (14 pcs 12V 12ah)
- RM BC 0720 - 3U (20 pcs 12V 7ah)
- RM BC 1220 - 5U (20 pcs 12V 12ah)

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Saver DSP Specifications

MODEL					
Tower Model	SD1103	SD1105	SD1106	SD1107	SD1110
19" Rack Mount Model	RMSD 1103	RMSD 1105	RMSD 1106		
Power (kVA)	3	5	6	7,5	10
INPUT					
Nominal Voltage	220V/230V				
Minimum Voltage	80V				
Minimum Voltage (At Full Load)	160V				
Maximum Voltage	280V				
Frequency	45-65 Hz				
Power Factor	>0,99				
Input Current Harmonics	< 6 %				
OUTPUT					
Power Factor	0,7				
Nominal Voltage	220V / 230V (Adjustable)				
Nominal current	13,6A	23A	27A	34A	45,5A
Wave Form	Pure Sine Wave				
Total Harmonic Distortion					
At 100% Linear Load	<2,5%				
At 100% Non-Linear Load	<3,6%				
Frequency	50Hz or 60Hz (Adjustable)				
Frequency Tolerance (Line Synchronized)	0,005 %				
Static Voltage Regulation (0%-100% Load)	<1%				
Crest Factor	3				
Overload (On Mains)(150% Overload)	63 Sec			35 Sec	49 Sec
Overload (On Battery)(150% Overload)	63 Sec			35 Sec	49 Sec
Total Efficiency	> 91,5%				
Greenmode Efficiency	> 97%				
BATTERY					
Type	Maintenance-Free Lead Acid Batteries				
Quantity (pcs)	14	20			
Back Up Time (At Nominal Load)	Internal Up To 25 Min At Tower Model	Internal Up To 22 Min At Tower Model	Internal Up To 15 Min At Tower Model	Internal Up To 10 Min At Tower Model	Internal Up To 9 Min At Tower Model
Recharging Time	< 4 h / 8 h				
Discharge Current Wave	< 10%				
DISPLAY					
LED Panel	Line, By Pass, Battery, Inverter, Overload, Fault Indicators				
LCD Panel	Load%, Battery Temperature, Input & Output & Battery Voltages, Output Frequency				
STATIC BY PASS					
Voltage Tolerance	10% (Adjustable)				
Frequency Tolerance	3Hz (Adjustable)				
Transfer Time	0 ms				
PROTECTION					
Overload Protection	By pass transfer time is calculated by simulating a temperature related model of a fuse				
Short Circuit Protection	Acts as the ideal current source during the short circuit time				
Other Protection	Against Excessive (Heat,Voltage,Current) Intense Battery Discharge				
COMMUNICATION					
Interface (Communication Ports)	RS 232				
Dry Contact Signals	Ups Shutdown,Mains Failure, Low Battery, By Pass Active, Summary Alarm				
ENVIRONMENT					
Operating Temperature	0 °C - 40 °C				
Storage Temperature	(-15 °C) - (55 °C)				
Proposed Temp.To Extend Battery Life	20 - 25 °C				
Humidity	< 95%				
Audible Noise At 1 m	<50 dB			<55 dB	
Protection Class	IP 20				
PHYSICAL SPECIFICATIONS					
Tower Type					
Net Weight (Without Battery)	43,1kg	48,4kg	49kg	50,9kg	54,8kg
Dimensions (cm) (WxDxH)	27x67x68				27x73x78
19" Rack Mount Type					
Net Weight (Without Battery)	20	24		N/A	
Dimensions (cm) (WxDxH)	48,3x59x13,3			N/A	
STANDARDS					
Standards	EN 62040-1-1 (Safety), EN 62040-2(EMC)				

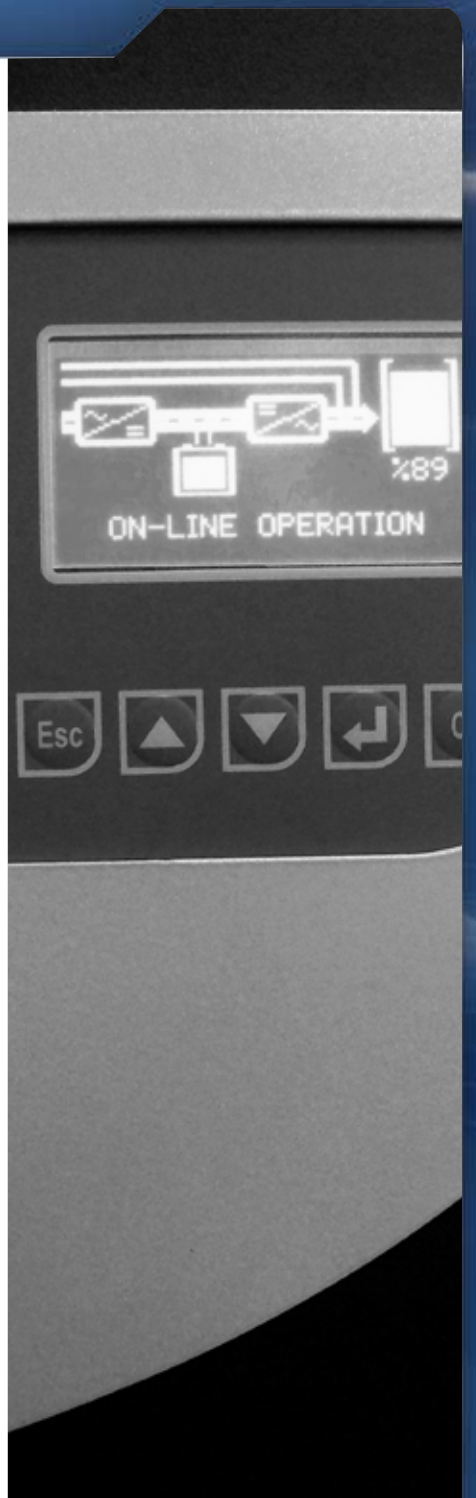
Green DSP Series

On-Line Double Conversion "3 Level Inverter" Technology
1 Phase in- 1 Phase out, 3 to 10 kVA

- On-line Double conversion "3Level Inverter" Technology
- Real Digital Signal Processor (DSP) controlled IGBT Technology
- High AC-AC Efficiency (94%)
- Increased Input Power Factor (p.f. > 0,99)
- Low Input Current THD (<6%)
- Low Output Voltage THD (<1.5%)
- Wide input voltage range (90 V - 270 V)
- Cold Start & Soft Start Features,
- Availability to start up from Mains without batteries,
- Intelligent battery management system extends the life time of batteries,
- Transformerless Design, Compact dimensions,
- Smart fan speed regulation according to Temperature,
- Multi-Functional LCD display (availability to adjust or calibrate the UPS, no need for software),
- Advanced LCD Panel Menu (availability to monitor 15 different parameters),
- Event Log Display up to 500 Events,
- Availability to configure as 50/60Hz Frequency Converter from LCD Panel,
- Advanced communication possibility via RS232 ,
- Management and monitoring software available for all operating systems,
- SNMP, Modbus, USB Card, Dry Contact & EPO Card (adjustable 5 relays) Options,

Green DSP Series Specifications

MODEL	GDSP1103	GDSP1105	GDSP1106	GDSP1107	GDSP1110
Power (kVA / kW)	3kVA / 2.4kW	5kVA / 4kW	6kVA / 4.8kW	7.5kVA / 6kW	10kVA / 8kW
Output Power factor	0.8				
Overall Efficiency (AC-AC)	94%				
INPUT					
Nominal Voltage	220V/230V/240V				
Minimum Voltage (at half load)	90V				
Minimum Voltage (at full load)	160V				
Maximum Voltage	270V				
Frequency	45-65 Hz				
Power Factor	>0,99				
Input Current Harmonics	< 6 %				
OUTPUT					
Nominal Voltage	208V to 242V (adjustable from LCD panel with 1V steps)				
Voltage Tolerance	±1%				
Nominal current @220V	13,6A	23A	27A	34A	45,5A
Wave Form	Pure Sine Wave				
Total Harmonic Distortion at 100% linear load at 100% non-linear load	 <1,5% <3,0%				
Frequency	50Hz or 60Hz (adjustable from LCD Panel)				
Frequency Tolerance(battery operation)	0,005 %				
Static Voltage Regulation (0%-100% load)	1%				
Dynamic Voltage Regulation (0%-100% load)	5%				
Crest Factor	3:1				
Overload					
100% to 125% overload	10 min				
125% to 150% overload	1 min				
Greenmode (Ecomode) Efficiency	> 98%				
BATTERY					
Type	Maintenance-free lead acid batteries				
Quantity (pcs)	20				
Recharge Time	< 6h - 8 h				
Warning	Audible Buzzer through the end of Battery Discharge				
DISPLAY PANEL					
LCD Panel	"Load %, Input/Output/Bypass Voltages, Output Power (W & VA), Output Current Output p.f., Battery +/- Voltage Values, Input / Output Frequency, DC Bus +/-Voltages, Remaining Back Up Time, Internal Temperature, Heatsink Temperature"				
Event Log	500pcs (control availability in detail from LCD panel)				
Audible and Visual Alarm Warning	41 different Alarm Messages				
BY-PASS					
Voltage Tolerance	±10%				
Frequency Tolerance	3Hz (adjustable from LCD panel between 0.5Hz to 5Hz)				
Transfer Time	0 ms				
Overload Capability	up to 175%				
PROTECTION					
Overload Protection	Bypass transfer time is calculated by simulating a temperature related model of a fuse				
Short Circuit Protection	Acts as the ideal current source during the short circuit time				
Other Protection	Protection against excessive heat,voltage,current & Deep Discharge Protection				
COMMUNICATION					
Interface (Communication Ports)	RS232 (standard), SNMP, Modbus and USB (optional)				
Dry Contact Port (Option)	5pcs from LCD Panel adjustable dry contact signals & EPO				
ENVIRONMENT					
Operating Temperature	0 ˚C.... + 40 ˚C				
Storage Temperature	-15 ˚C.....+55 ˚C				
Proposed Temp. to extend battery life	20 - 25 ˚C				
Humidity	< 95%				
Maximum Altitude	1000m				
Audible Noise (from 1m distance)	<50 dB				
Protection Class	IP 20				
PHYSICAL SPECIFICATIONS					
Net Weight(without battery)	43,1kg	48,4kg	49kg	50,9kg	54,8kg
Dimensions(cm) (WxDxH)	25x57x59				
STANDARDS					
Standards	EN 62040-1-1 (safety), EN 62040-2(EMC), EN 62040-3(Performance)				



Saver Plus DSP Series

Uninterruptible Power Systems
On-Line "Double Conversion" Technology
3 phase in 1 phase out 10 to 20 kVA

- On-line 'double conversion' technology
- Real Digital Signal Processor (DSP) controlled, IGBT technology
- Wide input voltage range (140V-480V)
- Input Power Factor Correction PFC (>0,97)
- Intelligent Battery Management System extends the life time of batteries
- Transformerless Design
- Small Dimensions
- Artificial intelligence algorithms to improve reliability and technical performance
- Manual Bypass
- LCD display
- RS 232 and relay interface
- Management and monitoring software available for all operating systems and SNMP support

Accessories

Communication

- Relay Interface Board
- Remote Monitoring Panel & 25m cable For Remote Panel
- UPSMAN (Management Software)
- Multiserver Shutdown Licence
- External Adapter
  SNMP Adapter Net Agent Mini DP 522
  SNMP Adapter CS121BL

Other

- Additional Charging Set (450W)
- Isolation Transformer

Battery Cabinets

UPS looking battery cabinets
- BC1720 (20 pcs 12V 18Ah)
- BC2620 (20 pcs 12V 25Ah)
- BC1232 (32 pcs 12V 12Ah)
- V14; V15; V24; V33; V34 (different battery configuration available)

Eco Cabinets (different battery configurations available)
- BC00;BC10;BC20;BC30; BC40; BC50; BC60

Saver Plus DSP Specifications

MODEL	SD3110	SD3115	SD3120
Power	10kVA	15kVA	20kVA
INPUT			
Nominal Voltage	380 V / 400V / 415V 3Phase, N		
Minimum Voltage	140V 3 Phase, N		
Minimum Voltage (At Full Load)	260V 3 Phase, N		
Maximum Voltage	480V 3 Phase, N		
Frequency	50 - 60Hz (45 to 65 Hz)		
Nominal Current	11.8 A / Phase	17,4 A / Phase	23,3 A / Phase
Maximum Current	36 A peak / Phase	53 A peak / Phase	71 A peak / Phase
Power Factor	>0,97		
OUTPUT			
Power Factor	0,7		
Nominal Voltage	220V / 230V (Adjustable)		
Wave Form	Sinus		
Total Harmonic Distortion	< 3%		
Frequency	50Hz or 60Hz (Adjustable)		
Voltage Regulation (Static)	1%		
Crest Factor	3		
Overload	> 30s (at 150 % Load)		
Total Efficiency	> 91%		
BATTERY			
Type	Maintenance-Free Lead Acid Batteries		
Quantity (Pcs)	20	32	
Recharging Time	< 4 h		
Discharge Current Wave	< 10%		
DISPLAY			
LED Panel	Line, Bypass, Battery, Inverter, Overload, Fault Indicators		
LCD Panel	Load%, Battery Temperature, Input&Output&Battery Voltages, Output Frequency		
STATIC BY-PASS			
Voltage Tolerance	10% (Adjustable)		
Frequency Tolerance	3Hz (Adjustable)		
Transfer Time	0 ms		
PROTECTION			
Protections	Overload Protection, Short Circuit Protection, High Temperature, Over Voltage, Over Current		
COMMUNICATION INTERFACE			
Interface (Communication Ports)	RS 232		
Dry Contact Signals	Ups Shutdown,Mains Failure, Low Battery, By Pass Active, Summary Alarm		
ENVIRONMENT			
Temperature	0 - 40 °C		
Suggested Temp. To Extend Battery Life	20 - 25 °C		
Humidity	< 95%		
Audible Noise At 1m	< 55dB From 1 m Distance		
Protection Class	IP 20		
PHYSICAL SPECIFICATIONS			
Net Weight (Without Battery)	55kg	125kg	130kg
Dimensions (mm) (WxDxH)	270x730x780	430x820x970	
STANDARDS			
Standards	EN 62040-1-1 (Safety), EN 62040-2(EMC)		

Pyramid DSP Series

Uninterruptible Power Systems

On-Line "Double Conversion" Technology, DSP Controlled IGBT Rectifier UPS

3 phase in / 3phase out 10 to 300kVA (PDSP version)

3 phase in / 3phase out 5 to 150kVA (PDSP-U version)

- IGBT Rectifier
- Real Digital Signal Processor (DSP) controlled transformerless design
- Input Power Factor Correction PFC(>0,99)
- Low Total Harmonic Distortion Level (THDi ≤ 4%)
- High Efficiency (up to 94%)
- Wide Input Voltage Range
- Generator Compatible Operation
- Evolution and redundancy guaranteed by on site Modular Parallel Systems
- Intelligent battery management system extends the lifetime of batteries
- Static and Manual Bypass
- Optional Galvanic isolation transformer
- Communication with computers and network systems with SNMP availability
- Expandable battery blocks
- Low installation and operating costs
- Different voltage applications with refer to country mains characteristic ;
  - PDSP version for 380/400/415V(Ph_Ph) applications
  - PDSP-U version for 200/208/220V(Ph_Ph) applications
  - Special voltage applications other than stated values
- EPO (Emergency Power Off)

→ 3 phase in 1 phase out version is available (10 to 40 kVA)

→ 50/60 Hz Frequency Converter version is available

Accessories

Communication

- Remote Monitoring Panel &25m Cable For Remote Panel
- UPSMAN (Management Software)
- Multiserver Shutdown Licence
- Internal SNMP kit :
  Internal Slot Card SNMP CS121BSC, slot box, cable
- External Adapter
  SNMP Adapter Net Agent Mini DP 522
  SNMP Adapter CS121BL
  SNMP Adapter with Modbus CS121LM

Other

- Splitt by-pass
- Parallel Kit
- Drawer Type Internal Battery Shelves 10 - 30kVA
- Special Battery Connection Cable for Drawer Type Shelves

Battery Cabinets

UPS looking battery Cabinets (different battery configuration available)

- V14, V15, V24, V33, V34

Eco Cabinets (different battery configurations available)

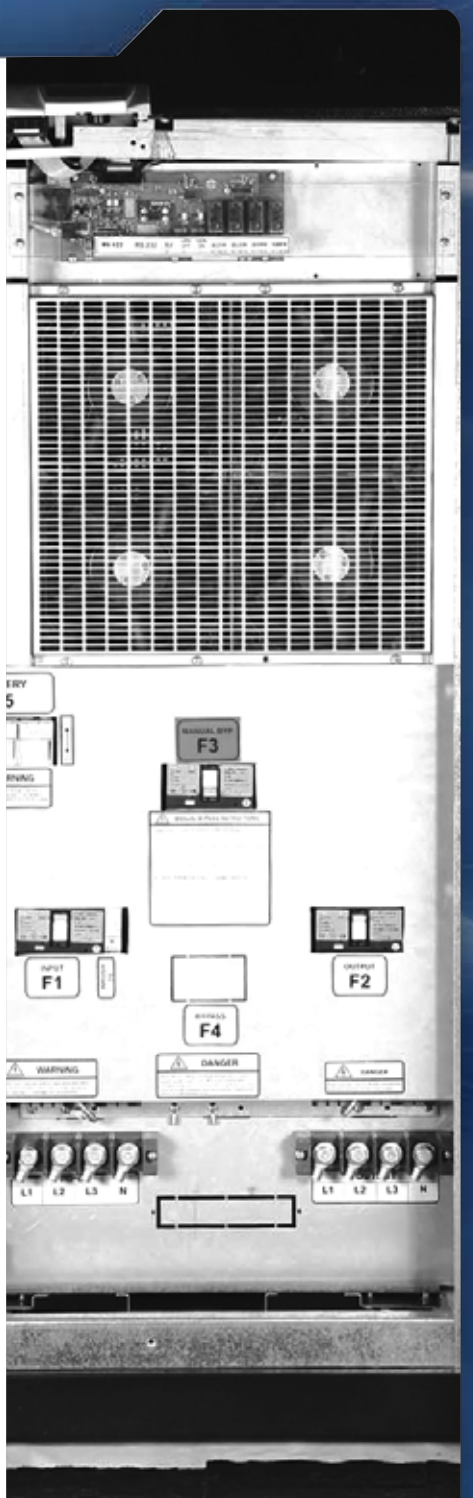
- BC20, BC30, BC40, BC50, BC60

TESID Innovation and Creativity Reward 2005

Pyramid DSP Specifications

MODEL (380-400-415V 3ph version)	PDSP33010	PDSP33015	PDSP33020	PDSP33030	PDSP33040	PDSP33060	PDSP33080	PDSP33100	PDSP33120	PDSP33160	PDSP33200	PDSP33250	PDSP33300
Output power (kva)	10	15	20	30	40	60	80	100	120	160	200	250	300
Nominal Active Power (kW)	8	12	16	24	32	48	64	80	96	128	160	200	240
MODEL (200-208-220V 3Ph version)	**PDSP-U33005**	**PDSP-U33007**	**PDSP-U33010**	**PDSP-U33015**	**PDSP-U33020**	**PDSP-U33030**	**PDSP-U33040**	**PDSP-U33050**	**PDSP-U33060**	**PDSP-U33080**	**PDSP-U33100**	**PDSP-U33125**	**PDSP-U33150**
Output power (kva)	5	7.5	10	15	20	30	40	50	60	80	100	125	150
Nominal Active Power (kW)	4	6	8	12	16	24	32	40	48	64	80	100	120
INPUT													
Number of phases	3Ph+N+PE												
Nominal Voltage (Ph-Ph)	200V / 208V / 220V (PDSP-U)												
	380V/400V/415V (PDSP)												
Voltage range (%100 load)	(-15)% (+27)% @PYRAMID DSP / ±15% @PYRAMID DSP-U												
Voltage range (%64 load)	(-45)% (+27)%@PYRAMID DSP												
Voltage range (%42 load)	(-64)% (+27)%@PYRAMID DSP												
Nominal Frequency (Hz)	50 or 60												
Frequency range for online operation	±10%												
Input Current THD	≤4% (*) (**)												
Input Power Factor	0.99												
OUTPUT													
Power factor	0.8												
Number of phases	3Ph+N+PE (PDSP & PDSP-U)												
Voltage (3ph_ Phase to Phase)	200V / 208V / 220V (PDSP-U) or												
	380V/400V/415V (PDSP)												
"Static Voltage Regulation at %100 Linear Load (online & battery mode)"	<1%												
Voltage THD at rated linear load	<3%												
Crest factor	3:1												
Frequency (Hz)	50 or 60												
Free Running Frequency (Hz)	± 0.01%												
Overload	125% for 10 minutes												
	150% for 1 minute												
Efficiency	up to 94% (**)												
BATTERY													
Type	Maintenance-free lead acid batteries												
Quantity (pcs) PDSP version	62 (2*31)									60 (2*30)			
Quantity (pcs) PDSP-U version	34 (2*17)												
Battery Protection	Deep Discharge Protection with Auto Cut off												
Battery Test	Standard (Automatic and Manual)												
DISPLAY													
LED Display	Line, Bypass, Battery, Inverter, Load, Fault Indications												
LCD Display	Load%, Input & Output Frequency, Voltage & Current, Bypass voltage, Battery Voltage & Current, Temperature, Alarms												
STATIC BYPASS													
Number of phases	3Ph+N+PE												
Voltage Range for bypass operation	± 10%												
"Frequency Range for bypass operation (Hz)"	± 6% (Configurable)												
COMMUNICATION													
Interface (Communication Ports)	RS232 & RS422												
Dry Contact Signals	AC failure, Battery under voltage, bypass operation, output failure												
Others	EPO, Generator interface												
ENVIRONMENT													
Storage Temperature Range (°C)	-25 to +55 (15 to 40 recomended for longer battery life time)												
Operating Temperature Range (°C)	0 to 40 (20 to 25 recomended for longer battery life time)												
Relative Humidity Range	0-95% (non-condensing)												
Maximum Altitude without derating (m)	1000												
Protection Level	IP20												
PHYSICAL SPECIFICATIONS													
Dimensions wxdxh (cm)	40 x 78 x 107				52 x 90 x 130		67x73x163		77x76x168	96x87x186		103*108*195	
Weight (kg)	100	114	116	122	180	202	253	285	347	522	570	735	750
STANDARDS													
Standards	EN 62040-1-1 (safety), EN 62040-2(EMC), EN 62040-3 (VFI-SS-111)												

(*) for source having THDv < 2 % @ nominal load
(**) varies depending on ups power



Pyramid DSP-T Series

Uninterruptible Power Systems

On-Line "Double Conversion" Technology, IGBT Rectifier UPS with Built in Isolation Transformer

3 phase in / 3phase out 10 to 300 kVA

- IGBT Rectifier
- Real Digital Signal Processor (DSP) controlled
- Built in Output Isolation Transformer
- Input Power Factor Correction PFC(>0,99)
- Low Total Harmonic Distortion Level (THDi ≤ 4%) and (THDv < 1.5%)
- Wide Input Voltage Range
- Generator Compatible Operation
- Evolution and redundancy guaranteed by on site Modular Parallel Systems
- Intelligent battery management system extends the lifetime of batteries
- Synchronization Capability with external sources
- Static and Manual Bypass
- Communication with computers and network systems with SNMP availability
- Expandable battery blocks
- Low installation and operating costs
- EPO (Emergency Power Off)

Accessories

Communication

- Remote Monitoring Panel & 25m Cable For Remote Panel
- UPSMAN (Management Software)
- Multiserver Shutdown Licence
- Internal SNMP kit:
  Internal Slot Card SNMP CS121BSC, slot box, cable
- External SNMP Adapter
  SNMP Adapter Net Agent Mini DP 522
  SNMP Adapter CS121BL
- SNMP Adapter with Modbus CS121LM

Other

- Splitt by-pass
- Parallel Kit

Battery Cabinets

UPS looking battery Cabinets (different battery configuration available)

- V14,V15,V24,V33,V34

Eco Cabinets (different battery configurations available)

- BC20,BC30,BC40,BC50,BC60

Pyramid DSP-T Specifications

MODEL	PDSP-T 33010	PDSP-T 33015	PDSP-T 33020	PDSP-T 33030	PDSP-T 33040	PDSP-T 33060	PDSP-T 33080	PDSP-T 33100	PDSP-T 33120	PDSP-T 33160	PDSP-T 33200	PDSP-T 33250	PDSP-T 33300
Output Power (kVA)	10	15	20	30	40	60	80	100	120	160	200	250	300
Active Power (kW)	8	12	16	24	32	48	64	80	96	128	160	200	240
INPUT													
Number of Phases	3Ph + N + PE												
Nominal Voltage (Ph-Ph)	380V/400V/415V												
Voltage range (100% load)	-15% ~ +27%												
Voltage range (64% load)	-45% ~ +27%												
Voltage range (42% load)	-64% ~ +27%												
Nominal Frequency (Hz)	50 or 60 ±10%												
Input Current THD	4% (*)(**)												
Input Power Factor	0,99												
OUTPUT													
Output Power factor	0.8												
Number of Phases	3Ph + N + PE												
Voltage	380V/400V/415V												
Static Voltage Regulation at %100 Linear Load (online&battery mode)	<1%												
Voltage THD at rated linear load	<1.5%												
Crest factor	3:1												
Free Running Frequency (Hz)	50 or 60 ± 0.01%												
Overload	125% for 10 minutes; 150% for 1 minute												
Efficiency	≥ 90% (**)												
STATIC BYPASS													
Voltage Range	380V / 400V (Ph-Ph) ± 10%												
Frequency Range for bypass operation (Hz)	±6% (Adjustable)												
BATTERY													
Type	Maintenance-free lead acid batteries												
Battery Quantity (pcs)	54 (2 x 27)												
Battery Protection	Deep discharge Protection with Auto Cut off												
Battery Test	Standard (Automatic and Manual)												
COMMUNICATION													
Interface (Communication Ports)	RS232 & RS422												
Dry Contact Signals	AC Failure, Battery Under Voltage, Bypass Operation, Output Failure												
Others	EPO, Generator Interface												
ENVIRONMENT													
Storage Temperature Range (°C)	-25 to +55 (15 to 40 recommended for longer battery life)												
Operating Temperature Range (°C)	0 to 40 (20 to 25 recommended for longer battery life)												
Relative Humidity Range	Up to 95% (non-condensing)												
Maximum Altitude without derating (m)	< 1000												
Protection Class	IP20												
PHYSICAL SPECIFICATION													
Dimensions (wxdxh) cm	40 x 78 x 107				52 x 90 x 130		63,5*100*140		76*102,5*168,5	96*108*182		161*108*195	
Weight (kg)	235		238	273	365	502	625	680	790	1200	1290	1675	1775
STANDARDS													
	EN 62040-1-1 (safety), EN 62040-2(EMC), EN 62040-3 (VFI-SS-111)												

(*) for source having THDv < 2 % @ nominal load

(**) varies depending on ups power

Pyramid Plus Series

Uninterruptible Power Systems
On-Line "Double Conversion" Technology
3 Phase in 3 Phase out / 10 to 300kVA

- On-line 'double conversion' technology
- State of the art IGBT & PWM technology
- Evolution and redundancy guaranteed by Parallel Systems
- Reliability of the battery ensured by Info-Charger
- Built-in maintenance and static by pass
- Galvanic isolation and/or modification for special voltages
- Comprehensive communication with computer & network systems and SNMP solutions
- Communication with building management systems
- Expandable and variable battery blocks
- 12 pulse rectifier options

Pyramid Plus Specifications

MODEL	PPS 310	PPS 315	PPS 320	PPS 330	PPS 340	PPS 360	PPS 380	PPS 3100	PPS 3120	PPS 3160	PPS 3200	PPS 3250	PPS 3300
Output Power kVA	10	15	20	30	40	60	80	100	120	160	200	250	300
INPUT													
Voltage	380V / 400V 3 Phase												
Voltage Tolerance	±15%												
Frequency	50 / 60Hz												
Frequency Tolerance	±10%												
OUTPUT													
Power Factor	0.8												
Voltage	380V / 400V 3Phase												
Tolerance (Static Condition)	+ - 1%												
Tolerance (Dynamic Condition)	+ - 5%												
Harmonic Distortion Rate On Lineer Load	<3%												
Harmonic Distortion Rate On Non-Lineer Load	<5%												
Crest Factor	3												
Frequency	50 or 60 Hz												
Frequency Tolerance	±0.2%												
Overload													
100% - 125% Load	10min.												
125% - 150% Load	1min.												
Overall Efficiency	≥ 90%												
BATTERY													
Type	Maintenance - Free Lead Acid Batteries												
Quantity	30pcs 12V Batteries											32pcs 12V Batteries	
DISPLAY													
LED Display	Line, Battery, Bypass, Inverter, Maintenance Switch, Output Switch Indicators												
LCD Display	Load%, Output Voltage & Frequency, Input And By Pass Voltages, Battery Voltage and Current, Temperature, Alarm Messages												
COMMUNICATION													
Interface (Communication Ports)	RS232												
Dry Contact Signals	Line Failure, Battery Low, Load On By Pass,												
PHYSICAL SPECIFICATIONS													
Weight Without Battery (kg)	225	255	270	285	400	475	655	815	940	965	1170	1465	1535
Dimensions (mm) WxDxH	490x650x1190				565x860x1400		720x820x1450	1120x820x1650		1200x860x1730		1590x950x1900	
ENVIRONMENT													
Audible Noise	<55dBA					<60dBA		63 to 66dBA				<70dBA	
Operating Temperature	0-40°C												
Relative Humidity (Non Condensing)	0-95%												
Protection Level	IP20												
STANDARDS													
Standards	EN 62040-1-1 (Safety), EN 62040-2(EMC)												

Pyramid-EX Series

Uninterruptible Power Systems
On-Line Double Conversion Technology
3 Phase in - 3 Phase out / 400 kVA to 800 kVA

- On-line double conversion technology with Sinusoidal Output
- State of the art IGBT Inverter & IPM Technology
- Galvanic Isolation at the Output
- Advanced Automatic and Manual Battery Test System
- Non-Linear Load Driving Capability
- High Efficiency with Low Operating Costs
- Built – in maintenance & automatic by-pass
- Overload and Short Circuit Protection
- History Event Log
- Utility and Generator Friendly Operation
- Temperature Compensated Battery Charging System
- User Friendly LCD panel helps to feature the ups easily
- Expandable and variable battery blocks
- Easy Installation and Maintenance with totally front accessibility
- RS232 Communication Interface and Monitoring Software
- SNMP & MODBUS Options

Pyramid-EX Specifications

MODEL	PDS 400	PDS 500	PDS 600	PDS 800
Output Power (kVA)	400	500	600	800
Output Power (kW)	320	400	480	640
INPUT				
Voltage	380V / 400V / 415V 3Phase+Neutral+PE			
Tolerance	-15%....+10%			
Frequency	50 / 60 Hz (adjustable)			
Tolerance	± 5 %			
OUTPUT				
Power factor	0.8			
Voltage	380V / 400V / 415V 3Phase+Neutral+PE			
Output Voltage Tolerance	± 1 %			
Dynamic Response at unbalanced load	± 4 %			
Dynamic Response at step load	± 5 %			
Response Time	<25msec			
Total Harmonic Distortion	< 3 % (@ 100% linear load) - < 5 % (@ 100% non-linear load)			
Crest Factor	3:1 with 75% load			
Frequency	50 or 60 Hz			
Frequency tolerance (free running)	± 0.2 %			
"Overload 125% load 150% load"	 10 min 1 min			
Overall Efficiency	92.0%			
BATTERY				
Type	Maintenance-free lead acid batteries			
Quantity	32pcs 12V Blocks	40pcs 12V Blocks		
Charge Voltage	432VDC	540VDC		
Discharge Voltage	320VDC	408VDC		
Nominal DC Voltage	384VDC	480VDC		
Battery Protection	Automatic Circuit Stopper			
Battery Test	In every 72hours automatically			
STATIC BYPASS				
Input Configuration	Common with Rectifier or Separate			
Transfer limits	± 5 % of Nominal Adjusted Output Voltage			
ENVIRONMENT				
Audible Noise	<70dBA			
Operating Temperature	0-40°C			
Relative Humidity (non condensing)	0-95%			
Protection Class	IP20			
PHYSICAL SPECIFICATIONS				
Weight without battery (kg)	1950	2500	2850	3200
Dimensions (mm) WxDxH	1250*830*1950	2300*930*2150		
STANDARDS				
	EN 62040-1-1 (safety), EN 62040-2(EMC), EN 62040-3 (VFI-SS-111)			

AVR Series

Automatic Voltage Regulator

Single Phase (2-30 kVA), Three Phase (6-1000kVA)

- Servo Motor Controlled Technology
- Fast Response to Fluctuations
- Reliable Stabilization for Secure Energy
- High efficiency in each model
- Short circuit protection
- Ability to work with non-linear loads
- Manual Bypass Switch
- Wide input voltage range version (optional)
- Electro-mechanic (breaker module) high-low voltage protection (optional)
- Output Isolation Transformer (optional)
- Digital Display (optional)
- Higher IP applications are available

AVR Specifications

MODEL	POWER	Dimensions	Weight	Response	Input		Output					ENVIRONMENT		
SINGLE PHASE	(kVA)	WxDxH (cm)	(kg)	V/Sn	Voltage (V)	Max current	Voltage (V) L-N	Frequency	THD	Efficiency (%)	Max current	Temperature	Audible Noise	Humidity
e-0201	2	25 x 43 x 27	21	80	160-245	10A	220/230/240±%1	same as input	w/o distortion, no affect on harmonics	≥ 95	7.3A	0-40°C	<45dBA	20-95%
e-0351	**3,5**	**25 x 43 x 27**	**26**			**17,5A**				≥ 96	**12,7A**			
e-0501	5	50,5 x 39 x 28,5	37			25A					19.4A			
e-0751	**7,5**	**50,5 x 39 x 28,5**	**46**			**37,5A**					**29A**			
e-1001	10	53,5 x 44,5 x 35	61			50A					39A			
e-1501	**15**	**36,5 x 62 x 64**	**85**			**75A**					**58A**			
e-2001	20	49,5 x 73 x 77,5	136			100A					74A			
e-3001	**30**	**49,5 x 73 x 77,5**	**145**			**150A**					**111A**			
THREE PHASE	(kVA)	WxDxH (cm)	(kg)	V/Sn	LINE-LINE	Max current	Voltage (V) L-L	Frequency	THD	Efficiency (%)	Max current	Temperature	Audible Noise	Humidity
e-0603	6	39,5 x 53,5 x 88	77,5	80	277-424	3x10,5A	380/400/415±%1	same as input	w/o distortion, no affect on harmonics	≥ 95	3x7,2A	0-40°C	<50dBA	20-95%
e-1053	**10,5**	**39,5 x 53,5 x 88**	**90**			**3x17,5A**				≥ 96	**3x12,7A**			
e-1503	15	39,5 x 58 x 91,5	130			3x25A					3x19,4A			
e-2253	**22,5**	**39,5 x 58 x 91,5**	**144**			**3x37,5A**					**3x29A**			
e-3003	30	44,5 x 68,5 x 102,5	195			3x50A				≥ 97	3x39A			
e-4503	**45**	**44,5 x 68,5 x 102,5**	**226**			**3x75A**					**3x58A**			
e-6003	60	54,5 x 103 x 131,5	387			3x100A					3x74A			
e-7503	**75**	**54,5 x 103 x 131,5**	**390**			**3x125A**					**3x91A**			
e-9003	90	54,5 x 103 x 131,5	455			3x150A					3x110A			
e-11003	**110**	**61,5 x 114,5 x 153**	**486**			**3x183A**					**3x133A**			
e-12003	120	61,5 x 114,5 x 153	500			3x200A					3x146A			
e-15003	**150**	**61,5 x 114,5 x 153**	**584**			**3x250A**					**3x182A**			
e-22003	220	88,5 x 180,5 x 132,5	960			3x366,7A					3x269A			
e-27003	**270**	**88,5 x 180,5 x 132,5**	**1196**			**3x450A**					**3x327A**			
e-36003	360	220,5 x 139,5 x 157,3	2045			3x600A					3x438A			
e-50003	**500**	**184,5x135,5x152**	**2740**			**3x833A**					**3x610A**			
e-100003	1000	343,5x170x162	3800			3x1666,7A					3X1223A			

SVR Series

Static Voltage Regulator
Single Phase (5-30 kVA), Three Phase (15-120 kVA)

- Thyristor Controlled Technology
- Microprocessor Controller
- Wide Input Voltage Range
- Reliable Output Voltage Stability
- Overload Capability up to 130% Load
- Electronic Control
- Swift response to voltage fluctuations
- High efficiency
- Manual Bypass Switch
- Operation Capability at high Temperature and Humidity
- Short Circuit and Overload Protection

SVR Specifications

MODEL	SINGLE PHASE						THREE PHASE						
OUTPUT POWER(kVA)	5	7.5	10	15	20	30	10.5	15	22.5	30	60	90	120
INPUT													
Voltage	220 Vac 1 ph						380 Vac 3 ph						
Voltage Range (Normal range)*	150-260 Vac						260-450 Vac						
Voltage Range(Wide range)*	110-270 Vac						190-467 Vac						
Voltage Range(Special range)*	90-285 Vac						155-490 Vac						
Frequency	50/60 Hz						50 /60Hz						
Frequency Tolerance	±%5						±%5						
Current (max) normal range*	32	47	66	94	125	188	22.0	32	47	66	125	188	250
Current (max) wide range*	46	68	91	136	182	273	32.0	46	68	91	182	273	364
Current (max)special range*	56	83	111	167	222	333	39.0	56	83	111	222	333	444
OUTPUT													
Voltage	220V AC 1 ph						380V AC 3 ph						
Voltage Tolerance	±%3 (±%2 and ±%5 optional)												
Response Time	320V / sec (@ ±%3 voltage accuracy)												
Frequency	50 Hz												
Power Factor	1												
Crest Factor	3												
Current (max per phase)	23	34	46	68	91	136	16	23	34	46	91	136	181
Overload													
%100 / %115 %115 / %130 > %130	10min 1min% Bypass												
EFFICIENCY													
	>95%												
DISPLAY/ALARMS													
7segment Display	Input Voltage,Output Voltage, Output Current, Frequency,Fault Codes, Temperature												
LED Display	"Input Out Of Range, Regulator Operation, Bypass Operation regulator on, regulator off"												
Alarms	"INPUT VOLTAGE LOW; INPUT VOLTAGE HIGH; OUTPUT VOLTAGE LOW; OUTPUT VOLTAGE HIGH; OUTPUT CURRENT HIGH; BYPASS OVER CURRENT; FREQUENCY OUT OF RANGE"												
COMMUNICATION													
Dry Contacts	Regulator Operation and Mains present Signals												
AUDIBLE NOISE													
From 1m	<50 dB (A)												
ENVIRONMENTAL CONDITIONS													
Temperature													
Operating	0°C.....+40°C												
Storage	.-30°C.....+75°C												
Relative Humidity													
Operating	%20.....%90												
Storage	%20.....%95												
Protection	IP20												
PHYSICAL SPECIFICATIONS													
Dimensions(mm) WxDxH	505x500x317			545x500x417	530x660x808		380x500x960	552x610x1115			735 x 895 x 1520		

Battery Charger

AC/DC Power Supply
30Amp to 400Amp

- Microprocessor controlled Thyristor Technology
- Built in output transformer topology
- Fully Adjustable float, boost and equalizing charge modes with V/I characteristics
- Advanced technology for phase control
- Very low voltage ripple and extended battery life
- Ability to operate as voltage or current source
- Wide range of options for monitoring
- Improved environmental operation characteristics
- Remote monitoring via RS232 communication port
- Potential free alarm contacts on extended alarm board
- Internal Over Temperature protection
- User Friendly Control Panel

Battery Charger Specifications

DC VOLTAGE	24VDC	48VDC	110VDC	220VDC
INPUT				
Input Phase	3 Phases			
Nominal Voltage Range	3x380V or 3x400V ± 15 % – 4 wire			
Frequency Range	47-63Hz			
Power Factor	>0,8			
OUTPUT				
Nominal Voltage	24VDC	48VDC	110VDC	220VDC
Nominal Current	30A / 60A / 100A / 200A / 400A			
Max Output Current	110% Of Inominal			
Float Charge Adjustment Range	80% - 115% of the nominal output voltage			
Boost Charge Voltage	80% - 125% of the nominal output voltage			
Equalizing Charge Adjustment Range	80% - 125% of the nominal output voltage			
Current Limit Adjustment Range	25% - 100% of the nominal output voltage			
Voltage Ripple	< 1% (with or without battery)			
Voltage Regulation	< 1% (10% to 100% load)			
Efficiency	80%		90%	
DISPLAY				
LCD Display Panel	Voltage, Current, Charge and Status Informations			
LED Display Panel	Line, Operation, Fault Indications			
GENERAL				
Charger Mode	Automatic / Manual U-I Characteristic			
Charger Type	Float / Boost / Equalizing Charge			
Cooling	Forced cooling with thermic controlled fan			
Input/Output Connections	Terminals			
Fuses	Semiconductor Type			
ENVIRONMENT				
Operating Temperature	-5 – +50 °C			
Relative Humidity	0% - 90%			
Protection Class	IP 20 (higher IP class is optional)			
STANDARDS				
Standards	89/336/EEC (EMC); 62040-1, 62040-2, 62040-3, IEC 950, IEC 439, IEC 146			
OPTIONS				
Dry Contact Card	4pcs Contact Alarms / Normally (Closed / Open)			
Parallel Connection	Available			
Others	Earth Leakage Monitoring, Dc Supply & Battery Monitoring, Gauges, Load Voltage Limitation Module / Voltage Drop, Battery Charge Temperature Compensation			

Infocharger

Battery Charger / DC Power Supply
25Amp to 200Amp

ICC Series

ICH Series

- Microprocessor Controller
- IGBT Technology (ICH Series)
- PFC Technology (ICC Series)
- Transformerless Design
- Wide Input Voltage Range
- Operation according to constant voltage and current principle
- Adjustable Boost and Nominal Charge Voltage
- Adjustable Output Current
- High Voltage, Over Current, Short Circuit Protections
- Over Temperature Protection
- Alphanumerical LCD Display and Control Panel
- Low DC Voltage Protection (LVD)- Optional
- Dry Contact Alarms- Optional
- Parallel Connection Availability at ICH Series- Optional
- Small Footprints, Compact Size

Accessories

• LVD • Relay Board • Parallel Kit

Infocharger Specifications

MODEL	ICC2460	ICC4830	ICC11015	ICH122450	ICH1224100	ICH1224200	ICH4850	ICH48100	ICH11025	ICH11050
Power	60Amp	30Amp	15Amp	50Amp	100Amp	200Amp	50Amp	100Amp	25Amp	50Amp
DC Voltage	24VDC	48VDC	110VDC	12 or 24VDC			48VDC		110VDC	
INPUT										
Input Phase	1Phase			1phase / 3Phase						
Nominal Voltage Range	90-265VAC			176-280VAC (Ph - N)						
Frequency Range	50/60Hz ± 10%									
Power Factor	>0,98			>0,8						
OUTPUT										
Nominal Voltage	24VDC	48VDC	110VDC	12VDC or 24VDC			48VDC		110VDC	
Nominal current	50Amp	50Amp	25Amp	50Amp	100Amp	200Amp	50Amp	100Amp	25Amp	50Amp
Output Current Adjustment value	0 to 50A	0 to 50A	0 to 25A	0 to 50A	0 to 100A	0 to 200A	0 to 50A	0 to 100A	0 to 25A	0 to 50A
Max Output Current	110% of Inominal									
Boost Charge Voltage	100% - 120% of the nominal output voltage									
Output Fluctuation	<1% rms AC Output Voltage									
Dynamic Response	less than 2% of output voltage									
Output protection	electronic short circuit / over voltage									
DISPLAY										
LCD Display Panel	Voltage, Current, Temperature, Charge and Status Informations									
LED Display Panel	Overload, Line, Battery, Load, LVD, Fault Indications									
GENERAL										
Cooling	Forced (FAN Cooling)									
Isolation Voltage	2000VAC between output and chassis									
Efficiency	90%									
Operating Temperature	0 – 40 °C									
Relative Humidity	0% - 90%									
Input/Output Connections	Terminals									
Fuses	input, load and Battery									
PHYSICAL SPECIFICATIONS										
Net Weight (kg)	11.6			35						
Dimensions(mm) (WxDxH)	250x420x280			265x556x560						
STANDARDS										
Safety	EN62040-1-1									
EMC	EN62040-2									
Performance	EN62040-3									
Protection Class	IP 20									
OPTIONS										
Dry Contact Card	6pcs contact alarms / normally(closed/open)									
LVD	Low Voltage Disconnect (Contactor)									
Parallel Connection	Not Available			up to 7 units						

Ps8000 Distribution Frame (180 amp) & Rd2000 Rectifier Modules

Inform PS8000, 180A DC Supply has been designed for GSM stations, telecom applications and other communication applications. PS8000 system is used in DC energy required application areas together with charging facility. 180A DC energy distribution system creates the –48VDC energy for the critical loads.

The system is composed of parallel redundant operating and forced current sharing RD2000 series rectifiers, AC distribution, DC distribution and Battery bank.

Inform rectifier is powered from single phase AC, providing DC output voltage to the supply of the critical loads and charging facility of batteries.

The switch-mode technology ensures the high efficiency of the equipment, allowing accurate control, fast dynamic response and keeping it small, light and quite.

The main benefits of RD2000 is ; Wide input voltage range, High power factor, Switch-mode technology, Redundant operation, Hot-swappable, Rectifier status control through main CU, Status LEDs on each module, Compact and Light Size

Ps8000 Distribution Frame & Rd2000 Rectifier Modules Specifications

GENERAL	
Input Voltage	380V /400V / 415V
Phase Configuration	3Ph + N + PE or 1Ph + N + PE
Alarm Contact Outputs	There are total 3 dry contact signals present on the frame for remote monitoring
PROTECTIONS	
Input	One fuse for each rectifier module.
Output	For DC distribution, up to 350A, total 16pcs fuses can be installed on the frame
Battery	Fuse according to the frame type for each battery bank
Battery low voltage Disconnect	Battery low voltage contactor for the protection of batteries from deep discharge
BATTERY MANAGEMENT	
Charge	Auto Charge Mode ; 49V Mode, 53.5V Mode, 57V Mode, 63 V Mode especially for wet batteries If any adjustment is not made on the CU menu, then the system shall start to operate at auto charge mode when it is switched on.
Low Voltage Disconnect	Low voltage disconnect contactor, disconnects the circuit at the adjusted value between 42VDC to 46VDC from the CU(Control Unit) as s/w or h/w.
Heat Compensation	Heat Compensation is applied according to the heating profiles of batteries connected either internally or externally.
RD2000 RECTIFIER MODULES	
INPUT	
Voltage	136 to 280 VAC (normal operation at nominal load)
	90 to 135 VAC (derating operation at 0,66 of the nominal load)
Frequency	45-65 Hz
Power Factor	0.99
Input THD	<3%
Efficiency	>91%
OUTPUT	
Voltage	48VDC (Nominal)
	45-63 VDC (Clearing Value)
	53,5 VDC (Factory pre-set)
Output Current	30 Amp
Current Share	±5%
Short Circuit Current	34 Amp
Output Regulation	<200mV (0-100% static load variation)
	<1V(5-100% load variation)
	<100mV (± 20%AC variation)
	<200mV (0°C-40°C temperature variation)
AC Ripple	<50mV AC (at 100Hz)
PHYSICAL SPECIFICATIONS	
Cooling	Forced and Conventional
Dimensions (mm) WxDxH	132x305x342
Net Weight (kg)	11,5
ENVIRONMENTAL SPECIFICATIONS	
Operating altitude (m)	< 2500
Operating Temperature	0°C-40°C
Relative Humidity	5 % - 95 %
Audible Noise	< 50dB

Solar Charge Control System

Solar Chargers

PCH-A300 (300W, 12V, 30AMP)

- Microprocessor controller
- Automatic battery voltage detection
- Three-stage charging optimizes battery performance
- Auto load-detection
- Multifunction LCD displays detailed information
- Reverse polarity protection of solar panel and battery
- High efficiency up to 96%

PCH-A600 (600W, 24V, 30AMP)

- Microprocessor controller
- Automatic battery voltage detection
- Three-stage charging optimizes battery performance
- Auto load-detection
- Multifunction LCD displays detailed information
- Reverse polarity protection of solar panel and battery
- High efficiency up to 96%

PCH-B (12V 10A 50W / 24V 10A 100W)

- 12VDC or 24VDC available
- Two-stage charging method
- Light weight design
- 5Amp max. charging current

PCH-P (12V 10A 100W / 24V 10A 200W)

- Microprocessor Controller
- Automatic battery voltage detection
- Three-stage charging optimizes battery performance
- Auto load-detection
- LED Indicators

Hybrid Inverter

- Multi-Functional Hybrid Inverter System with pure sinewave output;
  1. Availability to use as Solar Inverter with connection to solar panels for Photovoltaic Off-Grid System applications,
  2. Availability to use as Line-Interactive UPS with charger wherever utility supply is present,
  3. Availability to use as long back up UPS or Inverter with high capacity Lead Acid or Gel battery group,
- Powerful Charger with 40 ~ 60Amp charge current capability,
- Digital Control with Microprocessor controller,
- Advanced LCD Control Panel,
- Power Saving Feature with Highly Efficient Design,
- Low Heat Dissipation for Long Time Operation,
- Practical Design operating with almost all type of high capacity batteries,
- Compatibility with Linear and Non-Linear Loads,
- Pre-settable Parameters,
- Automatic Self-Test Function,
- Perfect Indoor UPS: clean, noise-free and odorless,
- Overload, Short Circuit, Low Battery Protections,
- Wall Mountable Design,

Hybrid Inverter Specifications

MODEL		INF-HI-800	INF-HI-1600	INF-HI-2400	INF-HI-4000	INF-HI-6000	INF-HI-8000
CAPACITY (VA/Watt)		1,2kVA/800W	2,4kVA/1.6kW	3,6kVA/2.4kW	6,6kVA/4kW	10kVA/6kW	13kVA/8kW
Nominal Voltage		220 / 230 / 240 VAC					
Acceptable Voltage		120 – 275 Vac					
Frequency		50 Hz / 60 Hz (45Hz -70Hz)					
"Voltage Range"	Line Low Transfer	120 VAC ± 2%					
	Line Low Return	130 VAC ± 2%					
	Line High Transfer	275 VAC ± 2%					
	Line High Return	260 VAC ± 2%					
OUTPUT							
Voltage		220 / 230 / 240 VAC (selectable from LCD screen)					
"Voltage Regulation (Batt. Mode)"		< %3 rms					
Frequency		50 Hz / 60 Hz					
"Frequency Regulation (Batt. Mode)"		± 0.1 Hz					
Power Factor		0.67			0.6		0.62
Waveform		Pure Sinewave					
TRANSFER TIME							
Typical		<8msec					
BATTERY							
Battery Voltage		12 VDC	24 VDC			48 VDC	
Battery Charge Voltage		13,8 VDC	27,6 VDC	27,6 VDC	27,6 VDC	55,2 VDC	55,2 VDC
Max. Input Voltage		25 VDC	50 VDC	50 VDC	50 VDC	100 VDC	100 VDC
"Max. Charge Current (3steps selectable)"		40 A	50 A		60 A		
SOLAR							
Solar Power Server		50 A					
"DISPLAY PANEL"							
LCD		UPS Status, I/P & O/P Voltage - Frequency, Load%, Battery Voltage & %, Temperature					
LED		Normal (Green), Warning (Yellow), Fault (Red)					
"AUDIBLE ALARM"							
Battery Mode		Beeping every 4 seconds					
Low Battery		Beeping every second					
UPS Fault		Beeping Continously					
Overload		"Beeping twice per second, UPS will shut down automatically in 30sec if overload is between 105~150% and over 150% it will shut down immidiately"					
ENVIRONMENT							
Operating Temperature		0 – 40 C°					
Relative Humidity		0-95% (non-condensing)					
Audible Noise		<55 dBA (from 1m)					
PHYSICAL							
Net Weight (kg)		14	21	23	49.2	51.4	53.6
Dimensions (W*H*D)		298*400*150	298*450*190	298*450*190	415*600*260	415*600*260	415*600*260

Info-PVI

Inform Photovoltaic Inverter - On Grid Version

- High Frequency Transformerless Design PhotoVoltaic Inverter
- Convectional Cooling System provided to guarantee quiet operation
- Compact Size, Light Weight
- Accurate Power Conversion from Solar panel to Local Grid
- Ease of Installation to Save Time and Money
- Real Digital Signal Processor (DSP) Controller
- Increased Efficiency (up to 98%)
- Minimum Power Loss, Maximum Reliability
- LCD Display Panel
- IP65 Enclosure for both Indoor and Outdoor Application
- Optional Monitoring Software provided to offer operational status and electricity generated data.

The INFO-PVI-ON series grid-connected Photovoltaic Inverter is delivered in a waterproof IP65 enclosure which can be installed in either a grid connected solar tracker system or a stationary PV system. By taking care of an accurate power conversion from solar panel to local grid, the INFO-PVI-ON series effects conversion process with minimal power loss and maximum reliability.

Info - PVI Specifications

MODEL / Description	INF-PVI-ON2000	INF-PVI-ON3000	INF-PVI-ON4000	INF-PVI-ON5000	INF-PVI-ON10000
Nominal AC Power	2000 W	3000 W	4000 W	5000 W	10000W
Maximum AC Power Output	2200 W	3300 W	4200 W	5300 W	10000W
SYSTEM					
Main Circuit	Self Current, Voltage System				
Conversion Mode	High Frequency PWM				
Isolation Method	Transformerless Design				
DC INPUT					
Rated Voltage(DC)	360V				720V
Maximum Voltage(DC)	DC 500V				1000V
Operation Voltage Range(DC)	120V - 500V				300V -1000V
Max.power point tracking range(DC)	150V - 450V				350V -850V
No. Of input connection/max. Current for each connection	1 Input (14.6A max. for each circuit)	1 Input (22A max. for each circuit)	2 Input (14A max. for each circuit)	2 Input (17.65A max. for each circuit)	2 Input (18.6A max. for each circuit)
AC OUTPUT					
Phase/Wire(AC)	1-phase/2-wire or 1-phase/3-wire(LNG)				3-Phase / 4Wire
Rated voltage(AC)	230VAC (184~264.5VAC)				400VAC (319~458V)
Rated frequency(AC)	50-60Hz(47.5~50.2Hz or 59.3~60.5Hz)				
Rated Current(AC)	8.7A	13A	17.4A	21.7A	3x14.5A
Current THD	<5%				<3%
Power factor	>0.99				0.8 ~ 1.0
Efficiency	up to 96%				up to 98%
Protections	Over Voltage, Under Voltage, Over frequency, Under frequency				
"Islanding Operation Detection"					
Passive method	Voltage phase jump detection				
Active method	Reactive power control				
Communication Interface	RS232, USB, RS485, Dry contact (Optional)				
ENVIRONMENT					
Temperature	-10°C …… +50°C				
Relative Humidity	0-90% RH Maximum, Non-Condensing				
Altitude	2000 m				
PHYSICAL SPECIFICATIONS					
Dimension(mm)	455x430x170		455x510x170		445x585x247
Net Weight(kg)	23		28		41
STANDARDS					
EMC	EN61000-6-1, EN61000-6-3, EN61000-3-3				
SAFETY	VDE0126-1-1, EN50178, EN60146-1				

Frequency Converter

3 Phase in 3 Phase out / 10 to 120kVA
50 / 60Hz - 50 / 60 / 400Hz

- Double conversion and PWM technology with pure sinewave output,
- Microprocessor controller,
- Galvanic Isolation,
- Efficiency up to 91%,
- Emergency close switch connection,
- User friendly front panel(5button and LCD indicator), detailed information availability to do the adjustment of parameters through front panel,
- History log of 128 events, calendar and time indicators,
- High performance at non-linear loads,
- Testing of the communication contacts via simulation,
- Dial-up modem connection availability (on AT Command set) ,
- Remote monitoring via network,
- SNMP compatibility,
- Low input harmonic distortion and increased pf with optional 12p version,
- 10 Years spare parts supply warranty,
- Low installation and operating cost,

Frequency Converter Specifications

MODEL	FC 3310	FC 3315	FC 3320	FC 3330	FC 3340	FC 3360	FC 3380	FC 33100	FC 33120
Output Power kVA	10	15	20	30	40	60	80	100	120
Output Power Kw	8	12	16	24	32	48	64	80	96
Power Factor	0.8 lagging								
INPUT									
Voltage	400 VAC or 380VAC 3phase ,4Wire + G								
Tolerance	±10%								
Frequency	50 / 60Hz								
Tolerance	±5%								
Power factor	0,8 (with optional 12 pulse version :0,95)								
max RFI	EN 50091-2 Class A								
OUTPUT									
Voltage	208VAC, 3Phase, 4Wire+G								
Voltage Stability	static (balanced load) : +/-2%								
	static (unbalanced load) : +/-4%								
	Dynamic (0% - 100%step load) : +/-6%								
Uptum Time	after 0%-100% step load: max25msec								
Crest Factor	3:1								
Frequency	50 / 60 / 400 Hz on request								
Frequency Tolerance	±0.2%								
Overload 101% - 110% Load	1h								
Overload 130% Load	10min.								
Overload 150% Load	1min.								
Overall Efficiency	up to 91%								
Total Harmonic Distortion	<3% at linear load								
	<5% at non-linear load								
COMMUNICATION									
Interface	RS232 and Dry Contact								
PHYSICAL									
Weight Without Battery (kg)	240	255	270	285	490	570	600	750	810
Dimensions (mm) WxDxH	490x650x1190				565x820x1400		720x800x1450	1192x874x1720	
ENVIRONMENT									
Audible Noise	<55dBA					<60dBA		63 to 66dBA	
Operating Temperature	0-40°C								
Relative Humidity (Non Condensing)	0-95%								
Max. Altitude	<1000m								
Standards	EN 50091-1 (safety), EN 50091-2 (EMC),IEC 62040-3 (class VFI), IP20								

Medical Isolated Power Systems

IT Systems are distribution systems which are preferred less compared to Grounded Systems at Industrial Institutions. The main reason for this is to maintain the installation integrity. But due to the electrical security that it provides, IT Systems are preferred to be used at the supply of the critical divisions in the Institutions. The main difference that discriminates IT systems from Grounded Systems (PN or PP) is the non-presence of the Institution Grounding. This is obtained by isolation transformer and each load that is connected to this distribution system has its own individual grounding. These systems are mainly used in the supply of the rooms like surgery rooms at the hospitals.

Benefits of the Isolation System;

- In the event of first isolation failure, energy blackout does not happen. The security equipment controls the system continuously therefore the energy blackout is prevented.
- The Medical Devices continue their normal operations.
- Fault Currents are reduced to non-critical levels which means the leakage current that is present within the room is reduced from mA levels to µA levels.
- A possible inconvenience in the surgery room is prevented where energy is reserved and blackout does not happen.

System Contents ;

Isolation, Load & Temperature Monitoring Device (ILT-107-V.4)

ILT-107-V.4 is a multi-functional device produced for electrical control at Isolation Systems. The following parameters can be observed with ILT-107-V.4 at IT Systems ;

- The insulation resistance of a one- or multiple-phase (for a maximum of 3) AC 230 V IT system
- The insulation resistance of an AC 24 V IT system (OP lamps with 1 or 2 one-phase circuits)
- The load current of one- or multiple-phase transformers up to 8 kVa (through converters)
- The temperature of the transformer (through a PTC or break contact).

It monitors all measuring lines. Its built-in full-graphics display allows you intuitive menu-led operation while providing you with the details of all operating and fault messages. You can also edit all of the parameterisable unit settings with a menu system and the parameters are stored in the non-volatile EEProm.

Alarm Announcer (BMTI4)

This terminal is used for displaying operating and fault signals in the IT networks in areas used for medical purposes in conformity with DIN VDE 0100 T710-2002:11. The unit also has a disinfection-friendly foil surface. The unit's intuitive menu control makes it easy to use. It can also create individualized alarm texts with configuration software, making it possible to switch up other trades.

The large-scale fully graphic display is lighted, allowing a clearly structured display of the information from several systems. Large programmable multifunction buttons enable you to control the display. Manual test and service functions can be initiated on the system bus. The electrical unit's technical data and operating states are transmitted through the CAN bus.

It also shows the operating states on the (red, green and yellow) LED's in addition to the text display. The unit can be upgraded to include digital inputs and outputs by adding a piggyback printed circuit board. The operating and alarm terminals can monitor one another during operation if two or more BMTI4 units are used and they indicate the breakdown of a BMTI4 unit.

Isolation Transformer

Isolation Transformers are the main devices of Isolated Systems. With the help of isolation transformer, the supplied room is isolated from the Grounded System. Consequently the leakage current within the room is reduced from mA levels to µA levels. Besides there is also one advantage that is; in case of initial Phase-Ground short circuit, there shall be no blackout.

The hospital isolation transformers that supply the mission-critical locations shall have the following important electrical features ;

The nominal power of the transformer shall be maximum 10 kVA.

- It shall be Single Phase. In case of it being 3 Phase then the L-L Voltage should be 250 VAC.
- The Short Circuit Voltage shall comply the Uk < % 3 condition.
- No Load Condition Current shall comply the Io < % 3 ondition.
- The Initial Current value shall be less then 8In.

InfoSTS Series (Single Phase)

Static Transfer Switch
1 Phase in 1 Phase out / 50Amp to 100Amp
19" Rack Mountable

- Uninterruptible transfer between the independent sources
- Synchron / asynchron transfer feature
- "In flight" transfer mode
- Source priority selection
- Automatic and Manual transfer in case of failure on both sources
- Module replacement without interruption under load
- Fast Diagnostic Response with microprocessor controller
- Internal (2 pcs) manual bypass
- Easy Maintenance availability
- Current Distortion level less than 1%
- High Efficiency
- Transfer to the second source in less than 5 ms in case of over low /high voltage values

InfoSTS Specifications

MODEL	STS1050	STS1100
GENERAL SPECIFICATIONS		
Nominal Voltage	220V / 230VAC (Monophase)	
Nominal Operation Current	50A	100A
Transfer Time	5ms	
PHYSICAL SPECIFICATIONS		
Cable Entry	Rear	
Air Entry/ Exit	Bottom/Top	
Advised Cable Cross Section	10mm2	35mm2
Dimensions WxDxH	(19"x360mmx U)	(19"x360mmx4U)
Weight (kg)	9kg	17kg
ENVIRONMENT		
Max Altitude	2000m Above Sea Level	
Humidity	0-90%	
Operating Temperature	0-40°C	
Audible Noise (From 1m)	<45dBA	
Protection Class	IP20	
STANDARDS		
Standards	EN 62310-2, EN 62310-1, EN 60950-1	

InfoSTS Series (Three Phase)

Static Transfer Switch

3 Phase in 3 Phase out / 50Amp to 600Amp

- Increased power quality
- Easy monitoring all parameters on LCD display
- Fast microcontroller (32 mips)
- Power blackout protection
- Automatic static switching
- Remote monitoring of input power sources
- Easy static and mechanical transfer between separate input sources
- Remote management of power events
- Power event logging
- Advanced RS232 communication features
- DRY contact alarm interface
- Password protected login system from remote site (time Access)
- 2 redundant power supplies for electronic boards (hot swappable)
- Easy front access to all components inside of the STS
- Second protection cover on live circuits which prevents electrical shock
- Input sources protected by fuses
- 3 positioned Maintenance bypass switch which prevents cross currents between input sources
- User adjustable parameters by entering a password.
- Built in real time clock.
- Alarm history (with date and time)
- Automatic transfer test from a remote site or using front panel
- Front panel Lamp test
- External emergency shutdown (EPO) input
- Hot plug construction during maintenance bypass
- High current output tolerance up to 1000%
- Temperature sensor inside the Cabinet
- Fast voltage black-out circuit
- Input phase balance and phase sequence fault detect circuit
- Adjustable Input source frequency lower/upper limits

InfoSTS Specifications

MODEL - 3Poles	STS350	STS3100	STS3150	STS3200	STS3250	STS3300	STS3400	STS3600
MODEL - 4Poles		STS4100	STS4150	STS4200	STS4250	STS4300	STS4400	STS4600
INPUT								
Voltage	380,400 VAC, (3 wires for 3 pole version and 4 wires for 4 pole version)							
Voltage Range	310-430VAC							
Frequency	50 or 60Hz +/-5%							
Voltage Distortion	<10%							
Input voltage Error Window	Adjustable							
Input Frequency Error Window	Adjustable							
OUTPUT								
Current	50A	100A	150A	200A	250A	300A	400A	600A
Voltage	380,400VAC, (3 wires for 3 pole version and 4 wires For 4 pole version)							
Crest Factor	up to 3,5							
Synchronized Transfer Time	Max 1.8 Msec (On 0 current mode)							
Non-Syncronised Transfer Time	Max 10 msec In 0 current mode, 0-25 sec adjustable in delay mode and In 0 current mode							
Load Power Factor Range	0,6 Lagging To 0,9 Leading							
Efficiency	>98%							
Overload	100% to 150% = 1 Minute 150% to 200% = 10 Seconds							
Type Of Transfer	Break before make							
As Standard	Overcurrent inhibit LCD front panel, MBP							
DISPLAY								
LCD Display	2 lines 16 character LCD display							
Monitored Parameters	Source 1 Voltages, Source 2 Voltages, Output Load, Phase Balance, Synchronization Source 1 Frequency, Source 2 Frequency, Phase Angel Degree, Temperature							
Indications	8 LEDs Arranged As Mimic Diagram							
Control Buttons	5 push button interactive with LCD panel							
Event Log	64 recorded alarm logs from panel Or RS232							
COMMUNICATION								
Interface (Communication Ports)	RS 232 Standard							
Dry Contact Signals	Output inhibit relay, Summary alarm relay, Static or manual transfer relay, S1 /S2 backfeed trip relay, Preferred source indicator relay, Load is connected to alternate input source relay							
GENERAL								
Neutral Connection	Available At 4 pole version							
Transfer Time	<5msec : Within CBEMA & IEEE For synchronized sources <11msec : For unsynchronized sources.							
Manual Transfer Switch	Available							
ENVIRONMENT								
Operating Temperature	0-40°C							
Relative Humidity (Non-Condensing)	0-90%							
PHYSICAL SPECIFICATIONS								
Dimensions (Mm) WxDxH	685x530x1500			685x570x1770				915x735x1935
Weight (Kg)	175			205	215	220	240	340
STANDARDS								
Standards	EN 62310-2, EN 62310-1, EN 60950-1							

Inforack

19" Rack Cabinet & Accessories

- Aesthetic looking and wide product range (6U, 9U, 12U.....47U)
- Design availability of front & back doors with secure, locking full length
- Protection Against dust entry
- Removable back door and side covers for easy installation
- Standard cable inlet and outlets (with special brush protection)
- Internal cabinet organizer system suitable for structural cabling
- Maximum cabling efficiency
- Special structure for communication and data cabling units
- Reliable and flexible solutions
- Assembled and disassembled structure option ensures the easy delivery & installation
- Adjustable front and back 19" mounting rails
- Shatterproof glass or perforated panel options
- Wide accessory options (shelve, socket, wheels, fan groups, ...etc)
- Active and silent ventilation with variable fan options
- RAL7035 Light Grey or RAL 9005 Black Color Options
- Customized cabinet applications according to various size and dimension demands

Accessories

- Shelves
- cable management
- cooling units w/wo thermostat
- other (side rails, drawers, keyboard drawers, monitor holders, circuit breakers, power strips, power distribution blocks, castor groups, screws, lightening fixtures, blank panels, grounding kit, plinths, baying kits, optic patch panel, optic termination box, etc)

IP55 INDUSTRIAL RACK CABINETS

- Water and dust proof with heavy duty and high load capacity
- Foamed seal on the inside of all doors and panels ensures protection category IP55 to EN60529

Industrial Cooling Systems

- Wall Mount or Roof Mount
- Maintenance Free
- Equipped with Condensate Dissipator
- Low Noise Option
- IP54/IP55 Protection Class
- Selfcleaning" condenser coil which remove the necessity of the air filter, avoiding the ordinary maintenance.

Wall mount type

Roof mount type

Rack Cabinet Specifications

Wall Mounted Types	Height (U)	Construction Structure	Panel Structure	Width (mm)	Depth (mm)
MIDDLE RACK (opening side panels) 600x(450-560)					
INF-MIDDLE RACK –7U	7U	Assembled	Openning Side & Rear Panels	600	450-560
INF-MIDDLE RACK–9U	9U	Assembled	Openning Side & Rear Panels	600	450-560
INF-MIDDLE RACK –12U	12U	Assembled	Openning Side & Rear Panels	600	450-560
INF-MIDDLE RACK–16U	16U	Assembled	Openning Side & Rear Panels	600	450-560
INF-MIDDLE RACK –20U	20U	Assembled	Openning Side & Rear Panels	600	450-560
MIDDLE RACK (ECO version) (non opening side panels) 600x(450-560)					
INF-MIDDLE RACK –7U	7U	Modular - Flatpackage / Assembled	Non-Openning Side Panels	600	450-560
INF-MIDDLE RACK –9U	9U	Modular - Flatpackage / Assembled	Non-Openning Side Panels	600	450-560
INF-MIDDLE RACK –12U	12U	Modular - Flatpackage / Assembled	Non-Openning Side Panels	600	450-560
INF-MIDDLE RACK –16U	16U	Modular - Flatpackage / Assembled	Non-Openning Side Panels	600	450-560
MIDDLE RACK SWING FRAME (DOUBLE SECTION version) (opening side panels) 600x(450+160)					
INF- SWING FRAME - 7U	7U	Assembled	Openning Side Panels	600	450+160
INF- SWING FRAME- 9U	9U	Assembled	Openning Side Panels	600	450+160
INF- SWING FRAME - 12U	12U	Assembled	Openning Side Panels	600	450+160
INF- SWING FRAME - 16U	16U	Assembled	Openning Side Panels	600	450+160
SOHO RACK (non opening side panels) 520x(320-400)					
INF-SOHO RACK - 6U	6U	Modular - Flatpackage /Assembled	Non-Openning Side Panels	520	320
INF-SOHO RACK - 6U- 10"	6U - 10"	Assembled	Non-Openning Side Panels	520	320
INF-SOHO RACK - 10U	10U	Assembled	Non-Openning Side Panels	520	400
INF-SOHO RACK - 16U	16U	Assembled	Non-Openning Side Panels	520	400

Stand Alone Types	Height (U)	Construction Structure	Feet/Panel Structure	Width (mm)	Depth (mm)
BIG RACK (ECO version) (non opening side panels) 600x(600-780)					
INF- BIG RACK – 22U	22U	Modular - Flatpackage	W /O PVC Leveling Feet /Non Opening Side Panels	600	600-780
INF- BIG RACK – 32U	32U	Modular - Flatpackage	W /O PVC Leveling Feet /Non Opening Side Panels	600	600-780
INF- BIG RACK – 42U	42U	Modular - Flatpackage	W /O PVC Leveling Feet /Non Opening Side Panels	600	600-780
BIG RACK (opening side panels) 600x (647-827)					
INF-BIG RACK – 22U	22U	Modular - Flatpackage / Assembled	With PVC Leveling Feet / Opening Side & Rear Panels	600	647-827
INF-BIG RACK– 26U	26U	Modular - Flatpackage / Assembled	With PVC Leveling Feet / Opening Side & Rear Panels	600	647-827
INF-BIG RACK – 32U	32U	Modular - Flatpackage / Assembled	With PVC Leveling Feet / Opening Side & Rear Panels	600	647-827
INF-BIG RACK – 36U	36U	Modular - Flatpackage / Assembled	With PVC Leveling Feet / Opening Side & Rear Panels	600	647-827
INF-BIG RACK – 42U	42U	Modular - Flatpackage / Assembled	With PVC Leveling Feet / Opening Side & Rear Panels	600	647-827
INF-BIG RACK – 47U	47U	Modular - Flatpackage / Assembled	With PVC Leveling Feet / Opening Side & Rear Panels	600	827
BIG RACK (HUGEversion) (opening side panels, with vertical organizer) 800x827					
INF-HUGE RACK–32U	32U	Modular - Flatpackage / Assembled	With PVC Leveling Feet / Opening Side & Rear Panels	800	827
INF-HUGE RACK–36U	36U	Modular - Flatpackage / Assembled	With PVC Leveling Feet / Opening Side & Rear Panels	800	827
INF-HUGE RACK–39U	39U	Modular - Flatpackage / Assembled	With PVC Leveling Feet / Opening Side & Rear Panels	800	827
INF-HUGE RACK–42U	42U	Modular - Flatpackage / Assembled	With PVC Leveling Feet / Opening Side & Rear Panels	800	827

Server Cabinet Types	Height (U)	Construction Structure	Door Structure		Width (mm)	Depth (mm)
			Standard	Option		
ECO ULTRA RACK (SERVER CABINETS) (non opening side panels) *600x1000*						
INF-ECO ULTRA RACK - 26U	26U	Modular - Flatpackage	Perforated	Glass	600	1000
INF-ECO ULTRA RACK - 36U	36U	Modular - Flatpackage	Perforated	Glass	600	1000
INF-ECO ULTRA RACK - 42U	42U	Modular - Flatpackage	Perforated	Glass	600	1000
ULTRA RACK(600mm)/SPECIAL RACK(780mm) (SERVER CABINETS) (opening side panels) *(600-780) x 1000*						
INF-ULTRA RACK – 26U	26U	Modular - Flatpackage / Assembled	Glass	Perforated	600/780	1000
INF-ULTRA RACK – 36U	36U	Modular - Flatpackage / Assembled	Glass	Perforated	600/780	1000
INF-ULTRA RACK – 42U	42U	Modular - Flatpackage / Assembled	Glass	Perforated	600/780	1000
INF-ULTRA RACK – 47U	47U	Modular - Flatpackage / Assembled	Glass	Perforated	600/780	1000

INDUSTRIAL COOLING SYSTEMS	Height (mm)	DESCRIPTION	NOISE LEVEL		Width (mm)	Depth (mm)
			Standard	Option		
Side Panel Mounted						
INF-C-IND-EVE	634	230V/1phase, IP54, 500 W L35L35, 410 W L35L50	Standard (65db)	Low Noise	308	221
INF-C-IND-EVE	634	230V/1phase, IP54, 850 W L35L35, 620 W L35L50	Standard (65db)	Low Noise	308	221
INF-C-IND-EVE	934	230V/1phase, IP54, 1050 W L35L35, 840 W L35L50	Standard (65db)	Low Noise	406	244
INF-C-IND-EVE	934	230V/1phase, IP54, 1400 W L35L35, 1170 W L35L50	Standard (65db)	Low Noise	406	244
INF-C-IND-EVE	934	400V/1phase, IP54, 1400 W L35L35, 1170 W L35L50	Standard (65db)	Low Noise	406	244
INF-C-IND-EVE	1004	400V/3phase, IP54, 2000 W L35L35, 1700 W L35L50	Standard (65db)	Low Noise	406	244
Roof Mounted						
INF-C-IND-EHE	180	230V/1phase, IP54, 330 W L35L35, 270 W L35L50	Standard (60db)	Low Noise	476	324
INF-C-IND-EHE	330	230V/1phase, IP54, 600 W L35L35, 510 W L35L50	Standard (65db)	Low Noise	600	320
INF-C-IND-EHE	330	230V/1phase, IP54, 900 W L35L35, 760 W L35L50	Standard (65db)	Low Noise	600	320
INF-C-IND-EHE	350	230V/1phase, IP54, 1400 W L35L35, 1170 W L35L50	Standard (65db)	Low Noise	604	448
INF-C-IND-EHE	350	400V/1phase, IP54, 1400 W L35L35, 1170 W L35L50	Standard (65db)	Low Noise	604	448
INF-C-IND-EHE	358	400V/1phase, IP54, 2000 W L35L35, 1700 W L35L50	Standard (67db)	Low Noise	604	448
High Capacity Cooling						
INF-C-IND-EVE	508	230V/1phase, IP54, 2700 W L35L35, 2300 W L35L50	70dB	N/A	1234	375
INF-C-IND-EVE	508	230V/1phase, IP54, 4100 W L35L35, 2900 W L35L50	75dB	N/A	1234	375
INF-C-IND-EVE	600	400V/3phase, IP54, 5800 W L35L35, 4500 W L35L50	70dB	N/A	2000	383
INF-C-IND-EVE	800	230V/1phase, IP54, 8000 W L35L35, 5900 W L35L50	76dB	N/A	2000	383
INF-C-IND-EVE	800	230V/1phase, IP54, 10000 W L35L35, 7800 W L35L50	76dB	N/A	2000	383

Accessories Compatibility Table

Product		Explanation	LINE INTERACTIVE				ONLINE MONOPHASE						ONLINE THREEPHASE			
		UPS Range	Guard Compact	Guardian	Informer	Informer Compact	Sinus & Sinus Eco	Sinus LCD	DSP Multipower	Saver DSP & Green DSP	Saver DSP Rack	Saver Plus DSP	Pyramid DSP	Pyramid DSP-T	Pyramid Plus	Pyramid Ex
Communication																
	External SNMP ADAPTER:Net Agent Mini DP522	NetAgent Mini is an ultra-compact, light and fast tool to remotely monitor and manage the UPS system. It can perform multi-client computer shutdown, auto-send notifications, display real-time input-output status, battery status, current UPS temperature and much more. It is also possbile to communicate via internet														
	External SNMP Adapter: CS121BL	CS121 adapters are powerful microcomputers for a wide range of monitoring and control applications. They serve as **communication and control agents** between the UPS and some network-based clients. It can perform multi-client computer shutdown with RCCMD, auto-send notifications, display real-time input-output status, battery status, current UPS temperature and much more. It is also possbile to communicate via internet, modem and modbus (option)														
	External SNMP Adapter with MODBUS (MODBUS Adapter)	MODBUS provides connection to Building Management System (BMS)														
	DRY CONTACT BOARD/RELAY INTERFACE BOARD	Provides contact signals like Bypass, Utility, Normal/Failure, Inverter On, Battery Low, Battery Bad, UPS Alarm, and UPS shutdown, etc. For each UPS model, the dry contact board may differ with the number or relays. Please check each product's page for specifications.														
	Internal SNMP Slot Card	It provides remote monitoring and management of the UPS like external SNMP Adapters. It is also possbile to communicate via internet. It is suitable to be plugged into the communication slot of the UPS.														
	USB Board	It provides the communication through USB port														
	RS 485 Board	It provides the communication through RS485 port for long distance data transfer														
	Remote Monitoring Panel	Remote monitoring panel enables the consumer to observe the ups display parameter from a remote location. Whatever displayed on the ups panel can be also monitored from the remote monitoring panel screen														
	RS232 to RS485 Converter	when the data transfer requires long distance up to 200m, then RS232 port of the ups can be converted to RS485 by the help of this converter.														
	RS 232 Multiplier	when one serial port is not enough then with this multiplier, the communication port qty can be increased to 2 pcs														
	EPO (Emergency Power Off)	Provides instant shut down in case of emergency														

Product		Explanation / UPS Range	LINE INTERACTIVE				ONLINE MONOPHASE				ONLINE THREEPHASE					
			Guard Compact	Guardian	Informer	Informer Compact	Sinus & Sinus Eco	Sinus LCD	DSP Multipower	Saver DSP & Green DSP	Saver DSP Rack	Saver Plus DSP	Pyramid DSP	Pyramid DSP-T	Pyramid Plus	Pyramid Ex
Software																
	Multiserver Shutdown licence	Provides shutdown of multi-client computers. Lincence is required for each client computer on the same network.														
	UPSMAN	Management and monitoring software														
Accesories																
	200w additional charger card for 1,2&3 kVA	Increased charging capacity for higher rating batteries where the standard charging current of the ups is not sufficient														
	500w additional charger card for 2&3 kVA	Increased charging capacity for higher rating batteries where the standard charging current of the ups is not sufficient														
	1000W Additional Charger Card	It provides additional battery charging power for UPS. With its isolation conversion technology plus precision control, the optional charger can be installed in parallel up to 4 units performing total 4000W Additional charcging power.														
	External Manual Bypass Switch	Provides manual bypass switch for maintenance.						(MTBS-SS123)	(MTBS60-12K, MTBS120-24k, MTBS200-40k)							
	External Socket Box	It provides 2 pieces Schuko and 4pcs IEC 320 C13 Outlets.							(Socket Box-DSPMP(2 pcs schuko, 4 pcs IEC outlets)							
	Rail kit	It provides easy intallation for rack mounted UPS systems.														
	Additional Charging Set 450W	It provides additional charging power for UPS. It can be mounted within UPS cabinet or battery cabinet														
	Splitt bypass	Separate source input for bypass line separating from rectifier input														
	Temperature Compensation	It provides temperature controlled battery charging.														
	CNC Module Optional	It provides backfeed protection against loads like CNC machines														
	Drawer Type Internal battery shelves	It provides drawers for internal batteries which makes the battery installation easier.														
	CNC Ready															

Battery Cabinets

Battery Cabinet Type		UPS Range / Cabinet	Capacity										Cabinet Dimensions			
			7 AH.	12 AH.	18 AH.	25 AH.	40 AH.	65 AH.	80 AH.	100 AH.	120 AH	150 AH	200 AH	Width	Depth	Height	Weight
	BC Cabinets (All Purpose)	BC 00	32	22	14	6	6							655	230	530	15
		BC 10	64	42	24	12	12							835	246	700	25
		BC 20	76	48	32	15	15	6	6					957	246	760	30
		BC 30	144	96	40	38	32	16	16					926	386	1073	50
		BC 40	120	72		32								828	386	846	35
		BC 50	240	144		64	48	32	32	32	8			1566	386	1166	80
		BC 60			90	100	80	64	64	64	45	45	32	1774	560	1781	230
	V Type PDSP Cabinets	V 14			62	31								400	765	1070	51
		V 15		62										400	765	1070	51
		V 24				32	31							525	880	1310	64
		V 33						35	35	35				835	1160	1310	143
		V 34				93	78							835	1160	1310	143
	V Type Informer Cabinets	BC 1000		6										135	430	390	10
		BC 2000	8											135	470	390	10
		BC 3000	12											135	470	390	10
	Informer Rack Cabinets	RMBC 1000		6										483	450	132	10
		RMBC 2000	8											483	512	132	10
		RMBC 3000	12											483	512	132	10

Battery Cabinet Type		UPS Range / Cabinet	Capacity											Cabinet Dimensions			
			7 AH.	12 AH.	18 AH.	25 AH.	40 AH.	65 AH.	80 AH.	100 AH.	120 AH	150 AH	200 AH	Width	Depth	Height	Weight
	V Type Saver (Plus) DSP Cabinets	BC1714			14									270	655	685	28
		BC 1426				14								270	655	685	30
		BC 0740	40											270	655	685	28
		BC 1720			20									270	655	685	30
		BC 2620				20								390	755	700	46
		BC 1232		32										270	655	685	30
	Saver DSP Rack Cabinets	RMBC 0714	14											483	535	134	11
		RMBC 1214		14										483	535	222	12
		RMBC 0720	20											483	535	222	11
		RMBC 1220		20										483	535	222	17
	BC Cabinets (DSP Multipower)	MPBC	20	20										425	563	222	16
	V Type DSP Multipower Cabinet	MPBC-V	20											445	677	132	15

Above battery configurations are given as per lead acid maintenance free batteries
Nicd batteries are also avalable with rack type cabinets
Battery connection cables are available upon request with refer to UPS & battery capacity and battery cabinet type

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- AGUSTA WESTLAND – ITALY
- AKZO NOBEL - PAKISTAN
- AIRPORT AUHORITY OF INDIA
- ALBARAK BANK – SOUTH AFRICA
- ALCATEL - PORTUGAL
- ALPHA MEDICAL – FRANCE
- AMALGAMATED HEALTH CARE SOUTH AFRICA
- ALVARVE UNIVERSITY - PORTUGAL
- ANGOLA AIRPORT – ANGOLA
- ATATURK AIRPORT - TURKEY
- AUCHAN SUPERSTORES - ITALY
- AZERCELL - AZERBAIJAN
- BANGLALINK-BANGLADESH
- BANK OF GUINEA-GUINEA
- BANK AL HABIB-PAKISTAN
- BANQUE B.C.P – FRANCE
- BARILLA - ITALY
- BARWON PRISON-AUSTRALIA
- BASHKORTOSTANA TV - RUSSIA
- BATUMI AIRPORT- GEORGIA
- BAUER - GERMANY
- BLOEMFONTEIN INT AIRPORT- SOUTH AFRICA
- BOUYGUES TELECOM – FRANCE
- CAMARA MUNICIPAL DE FAFE PORTUGAL
- CANCER HOSPITAL-BANGLADESH
- CARREFOUR - TURKEY
- CARREFOUR- ITALY
- CARREFOUR - BRASIL
- CASINO DE SAINT PAIR – FRANCE
- CEGELEC - GERMANY
- CENTRE HOSPITALIER D'ARGENTAN FRANCE
- CENTRAL HOSPITAL - RUSSIA
- CENTRO HOSPITALAR COVA DA BEIRA – PORTUGAL
- CHAMBRE D'AGRICULTURE DES DEUX SEVRES – FRANCE
- CHANTIER CEGELEC BATIMENT GRAND TOULOUSE –FRANCE
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- CLINIQUE LA SOLANE - FRANCE
- COIMBRA CENTRO- PORTUGAL
- COLGATE PALMOLIVE -PAKISTAN
- COLOPLAST- HUNGARY
- COMMERCIAL & INDUSTRIAL CHAMBER OF SALONIKA-GREECE
- CONSOL SPECIALITY GLASS SOUTH AFRICA
- COSCOM-UZBEKISTAN
- CUSTOMS POLICE- ROMANIA
- CREDIT EUROPE BANK - RUSSIA
- CSKA STADIUM- RUSSIA
- DAIMLER CHRYSLER-GERMANY
- DANONE - FRANCE
- DELTA STATE GOVERNMENT NIGERIA
- DENEL AEROSPACE – SOUTH AFRICA
- DHL MALAYSIA- MALAYSIA
- EKO FM - NIGERIA
- ERICSSON - TURKEY
- ERICSSON-GERMANY
- ERCAN AIRPORT - CYPRUS
- EXPRESS HIGHWAY - S.KOREA
- ESIA BAKRIE TELECOM INDONESIA
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- FNB BANK - S.AFRICA
- FIDELITY BANK PLC - NIGERIA
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- LEICESTER MERCURY NEWSP-UK
- LG - S.KOREA
- MARZ - GERMANY
- MEGA CENTER- RUSSIA
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- MINISTRY OF COMMUNICAT. ROMANIA
- MINISTRY OF EDUCATION KAZAKHSTAN
- MINISTRY OF JUSTICE- ROMANIA
- MINISTRY OF HEALTH- RUSSIA
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- NATIONAL BANK OF GREECE GREECE
- NATIONIAL ELECTRIC CO.- BULGARIA
- NATIONAL ORTOPAEDIC HOSPITAL, IGBOBI - NIGERIA
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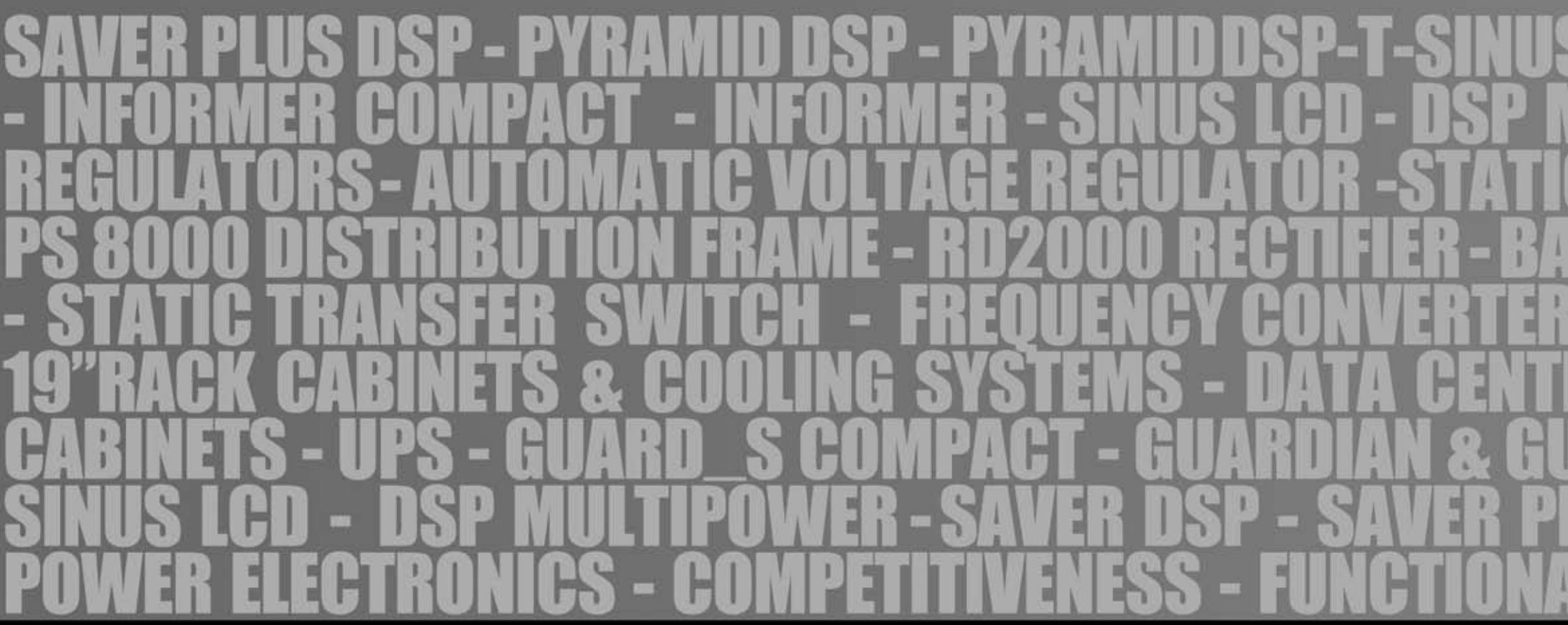
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